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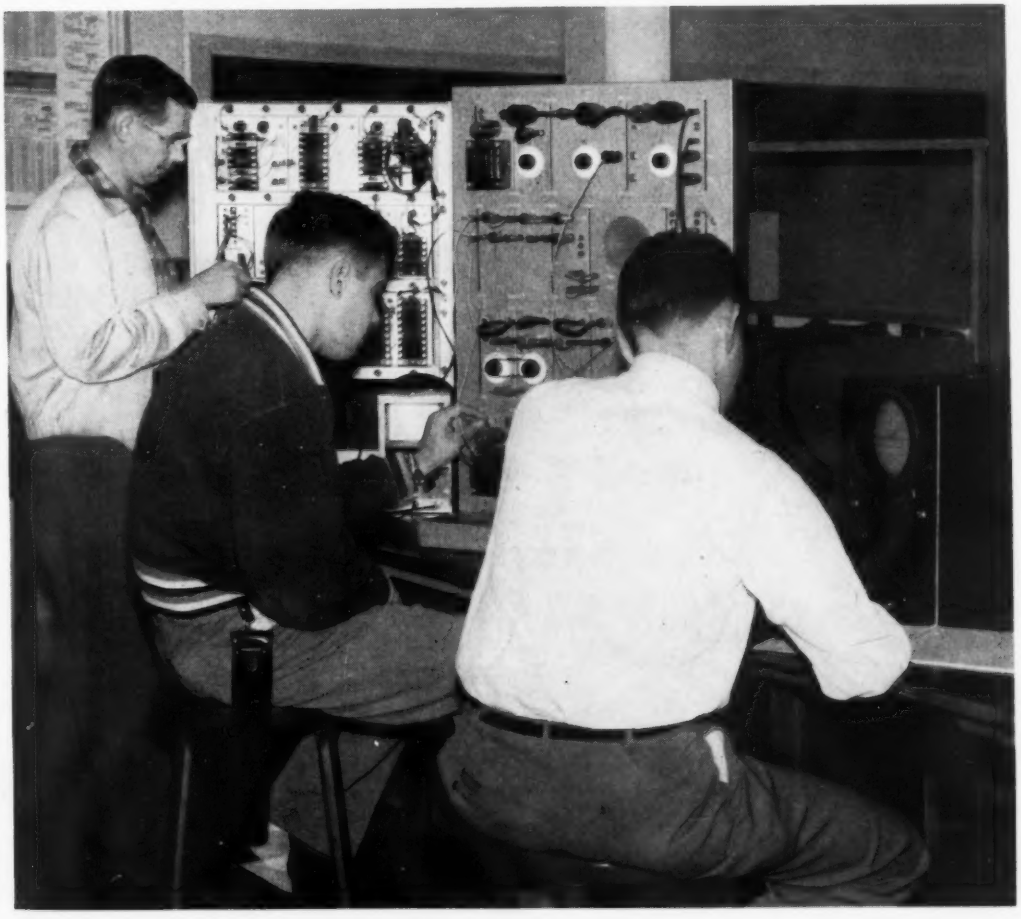
MAY 18, 1957
VOL. 152 — NO. 20

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY



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NEW TELEPHONE COURSE

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MANAGEMENT • PLANT • TRAFFIC • COMMERCIAL • LEGAL • ACCOUNTING

57

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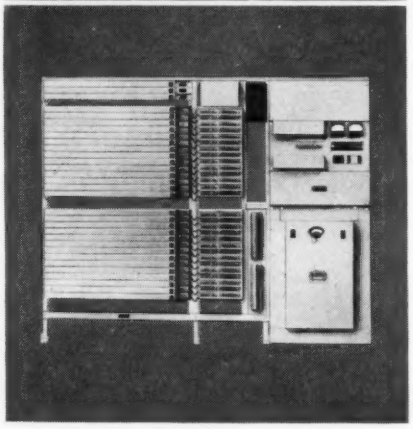
F-40 equipment cabinet easily rolls anywhere in office. Furnished in harmonious office gray, it is only 6′ 4″ high, 4′ 1″ wide, 2′ deep.



F-80 PBX is 6′ high, 7′ wide, 1′ deep. It is wired for night answering service; offers single party, restricted and "executive-right-of-way" service; provides conference and code call facilities. It has a capacity of 14 talking paths, 10 central office and 4 information trunks, and up to 80 lines.

"Ourc
d
'A

W. R. Schaffner, left, secretary of The Sexauer Company of Brookings, S. D., watches Mayor Homer Dwiggins place a call on the company's new Stromberg-Carlson F-40 Dial PBX. In front of the Mayor is the cordless attendant's cabinet—about the size of a modern adding machine.

XUM

Our commercial customers are delighted," *said exchange manager*

"A joy to operate," *said user*

They're talking about the XY® F-40 Dial PBX.

Mr. Charles O'Neill, Manager of the Brookings (South Dakota) Municipal Telephone Exchange, recently installed an F-40 at The Sexauer Company, a local grain and feed firm. Mr. O'Neill reported that the customer is delighted with the efficient dial service provided by this compact PBX.

"The turret is a joy to operate," said Mrs. Marles Kangas, operator-receptionist at The Sexauer Company. "I'm amazed at the extra time it allows me for my other duties. Takes up so little space, too."

You'll find the F-40, with its capacity of 10 trunks, is the ideal answer to dial PBX service for medium-sized commercial offices. It provides manual intercept on incoming trunk calls; extension, hold and transfer facilities for up to 40 stations.

The Stromberg-Carlson F-80 Dial PBX (capacity up to 80 lines, 14 talking paths, 10 central office and 4 information trunks) is the F-40's larger companion. It is "tailored" for factories, large offices, schools, hospitals and other business and institutional subscribers.

For complete technical data and selling aids on both dial PBX's, call or write the Stromberg-Carlson sales office in your area.

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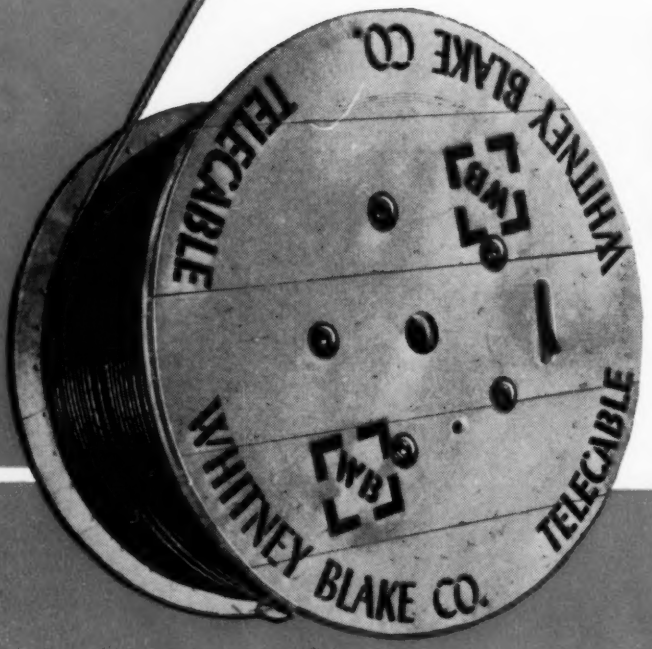

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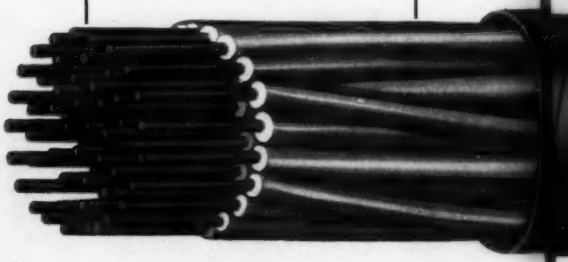

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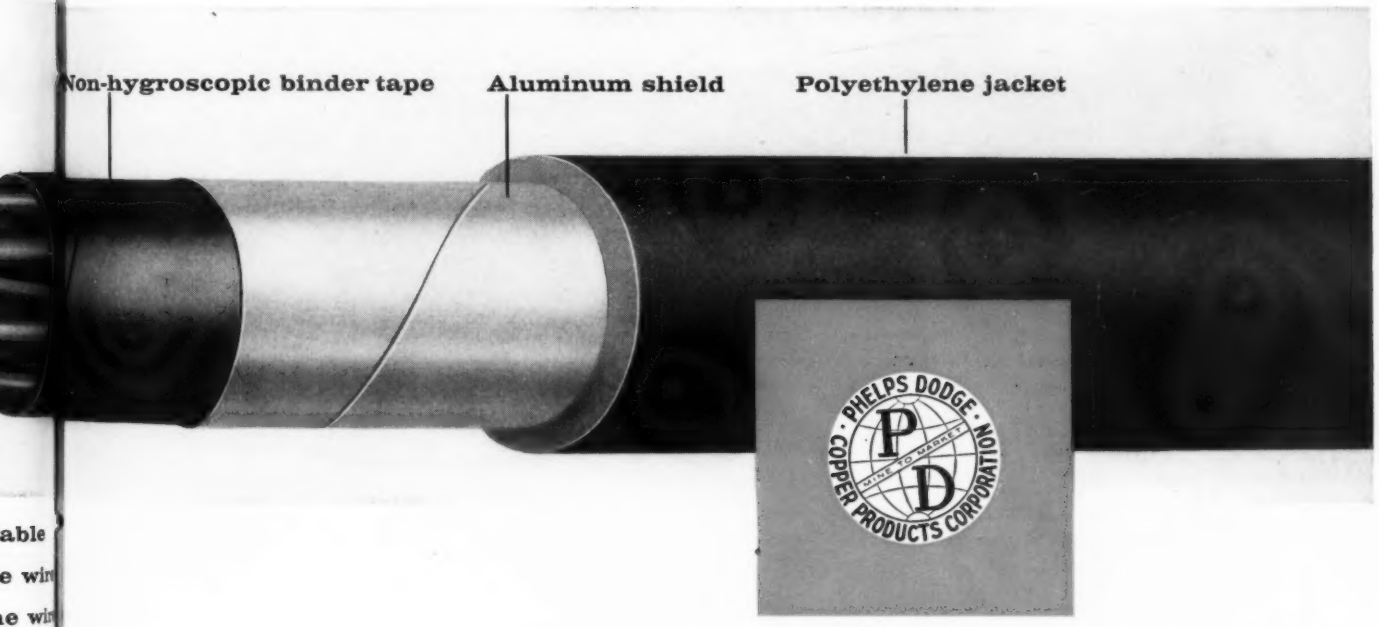

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FLASHES AND PLUGS

AGE OF INVENTION. A Bulgarian newspaper recently chided the country's parents for giving children names that are ugly and absurd, reports the Associated Press. Among the examples cited were "Telephone," "Gramophone" and "Cashier." "Telephonka" would be the Bulgarian rendition.

The rash of name oddities apparently has broken out in Russia, too, for Moscow papers recently criticized parents for dubbing their infants such detestable names as "Electrification," "Combine" and "Detector."

•

DUDLEY SITUATION. S. J. Klingel, manager of the Madison Telephone Co. of Bethalto, Ill., recently sent TELEPHONY a news report telling of the good-natured fuss aroused when the Madison company selected "Dudley" as its telephone number prefix.

The confusion was occasioned by the way certain business numbers are listed in classified ads. One example is: "Call Dudley 4-4332." Those unaware of the new exchange name, dialed their calls and asked for "Dudley."

The *Alton Evening Telegraph* observed, "The people at the other end of the line never heard of Dudley. Worse, if they have been dragged out of a bathtub and are dripping water on the living room rug while eyeing the door against the possibility of intruding children, they most heartily wish Dudley would drop dead—whoever Dudley might be."

It shouldn't be long before everybody knows Dudley.

•

FAIR ENOUGH. A Hannibal, Mo. service representative was discussing arrangements for new service with a customer over the telephone.

The line was noisy and the lady calling was unable to hear the service representative. The representative, in turn, explained that it was noisy outside the business office, too, because of a fleet of firetrucks rushing by.

Shortly after the sirens had faded into the distance, the customer's voice faded, too.

Then the lapse in conversation was suddenly explained when the lady shouted, "I'll have to hang up. My house is on fire!"

•

QUICKER THE SOONER. A Houston man called the court house in that Texas city and asked the PBX operator for the department that handles road construction.

"Right-of-way?" she asked.

"Well, as soon as possible," said the caller.

CHANGE OF ADDRESS

Please notify your local postmaster and Circulation Dept. of TELEPHONY of change of address. Change cannot be made without the old as well as the new address. Allow three weeks for change of address to become effective.

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY
Since 1901

May 18, 1957

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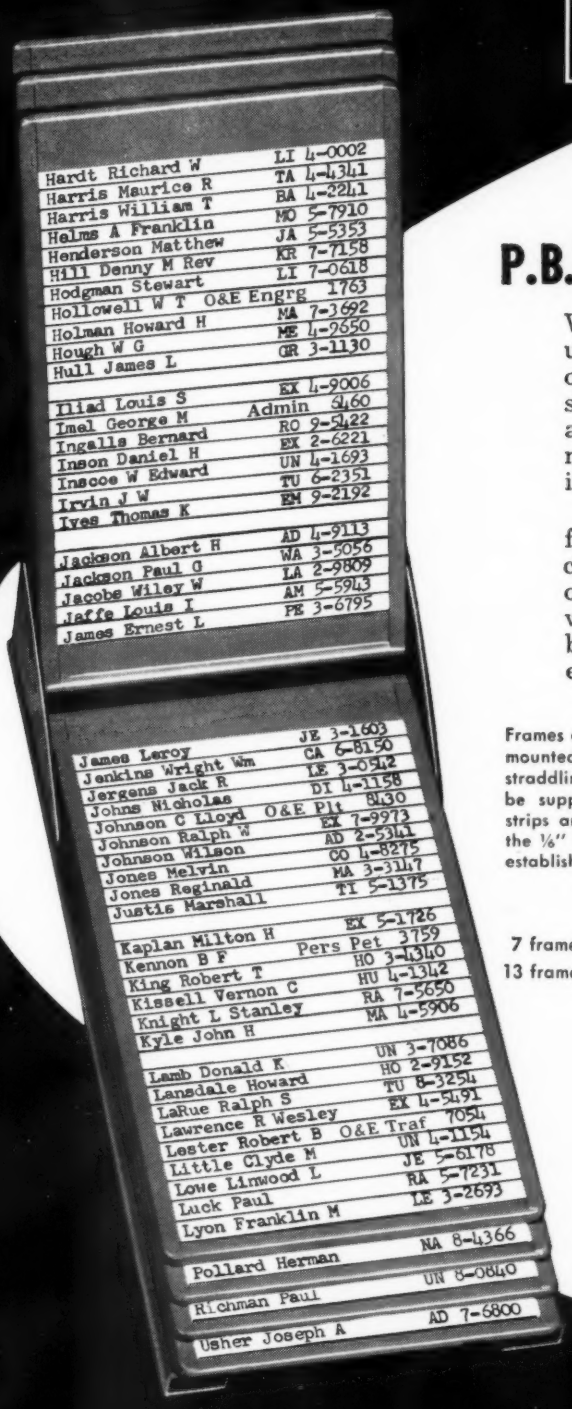
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Harris Maurice R TA 4-4341
Harris William T BA 4-2241
Helms A Franklin MO 5-7910
Henderson Matthew JA 5-5353
Hill Denny M Rev KR 7-7158
Hodgman Stewart LI 7-0618
Hollowell W T O&E Engrg 1763
Holman Howard H MA 7-3692
Hough W G ME 4-2650
Hull James L GR 3-1130
Iliad Louis S EX 4-9006
Imel George M Admin 4460
Ingalls Bernard RO 9-5422
Inson Daniel H EX 2-6221
Inscoe W Edward UN 4-1693
Irvin J W TU 6-2351
Ives Thomas K EM 9-2192
Jackson Albert H AD 4-9113
Jackson Paul G WA 3-5056
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Kissell Vernon C HU 4-1342
Knight L Stanley RA 7-5650
Kyle John H MA 4-5906
Lamb Donald K UN 3-7086
Lansdale Howard HO 2-9152
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Lawrence R Wesley EX 4-5491
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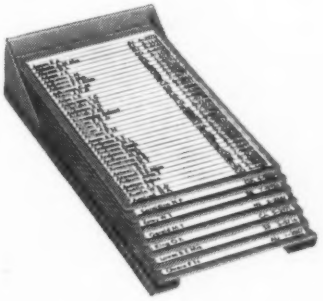

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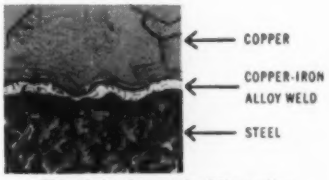

This photomicrograph of the molten weld shows how the grains of copper and steel interlock to form a permanent, continuous weld.

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...did you see this news about small manual exchanges?

TROUBLE CLEARING

Facts & Fallacies About Magneto Service

By L. N. MARTIN

WHY SHOULD we be writing about the magneto telephone at the present time? Many magneto exchanges are still in service. On Jan. 1, 1956, Independent telephone companies had approximately 4800 magneto exchanges. That was about 44 per cent of the total of Independent exchanges, including the large city exchanges. Magneto boards are now found only in small offices, with one-position boards predominating. If we should compare the number of magneto exchanges to the total number of *small* exchanges, this percentage would probably run much higher.

Now, even if we grant that the last of these exchanges will have disappeared from the scene within the next few years, each one must be maintained during the remainder of its life.

Each magneto exchange is very important to the community it serves. It furnishes the *only* telephone service these people have and they are entitled to the best service the company can furnish.

Good service is *nice good* business for a company. It attracts new customers, more toll business, and more auxiliary business, such as extension telephones, hence revenues are increased.

Where public opinion is forcing a small company to convert to automatic operation, before it is ready to take that step, the public reaction has probably been generated by *poor* magneto service. Unless that company mends its ways the service will continue to be poor and its public relations will not improve no matter what kind of a switchboard they install.

The owner of a magneto exchange should understand that he *can* give good service with his present plant. He should know that many of the derogatory statements made about magneto service are untrue.

On the other hand, he should be acquainted with the real shortcomings and limitations of the magneto system and try to offset them whenever possible.

PART 55. The preceding article in this series appeared on page 28 of the Feb. 16 issue.

The popular opinion is that magneto lines are always noisy, crosstalk is prevalent, and transmission is poor. Now, a telephone man should know that these conditions are in the outside plant and have nothing to do with the magneto switchboard or the magneto telephones.

This trouble would actually become worse if the plant were cut over to automatic without correcting the outside plant conditions.

The first step in an automatic cut-over is to thoroughly overhaul the outside plant. If that must be done before a cut-over, why not do it *now* and give *good* magneto service in the meantime.

Transmission over a magneto line is just as good and sometimes better than that over an equal common battery line. We must remember that toll lines are like magneto lines in that they carry no battery current. However, the dry cells in the magneto telephone must be in good condition to attain good transmission.

The magneto switchboard requires a human operator. One fault of the magneto system is that the operator does not get a disconnect signal when the subscriber hangs up. To give good service she must "listen in" on all connections at frequent intervals and "challenge" if she does not hear a conversation. Now, this is no excuse for poor service. The operator must be trained in magneto operation and she cannot be expected to handle as many lines as she would on a common battery board.

The automatic board substitutes a mechanical operator for a human operator. There are arguments in favor of each. When an operator makes a human mistake, such as ringing a wrong number, we may wish for a mechanical operator.

However, the automatic board does not eliminate wrong numbers. It merely transfers the chance for a human error from a trained operator to an untrained subscriber. (Note: "Wrong number" and similar reports increase after a cut-over to automatic. They decrease again in time but are never eliminated.)

On the other hand, when some emergency comes up, we may wish for the prompt and effective action of an intelligent human operator. Every few days we read in the papers how a courageous and quick thinking operator has saved life and property. Some of these women receive medals and other awards for their acts. However, so far as we can learn, no medal has yet been awarded to an automatic switchboard.

Now, the foregoing discussion of operators is not intended to prove anything. However, it does remind us of the old saying, "You can't eat your cake and have it, too."

Some small exchanges have trouble obtaining suitable operators. One company, with which we are well acquainted, is converting to automatic solely because it cannot obtain operators in its community. On the other hand, [illegible] which have no trouble [illegible] in getting excellent operators at reasonable wages.

If, someday, the federal wage-hour law is changed to eliminate the present 750-station exchange operator exemption, many small companies operating manual exchanges will be in hot water. If they were forced to pay the minimum wage rate to operators, on a 24-hour basis, their operators' wages would exceed their gross revenues.

We are not prepared to discuss the [illegible] in the present article. However, in the final analysis small companies must give their subscribers good telephone service and the companies must earn a reasonable return on their investment.

LEICH

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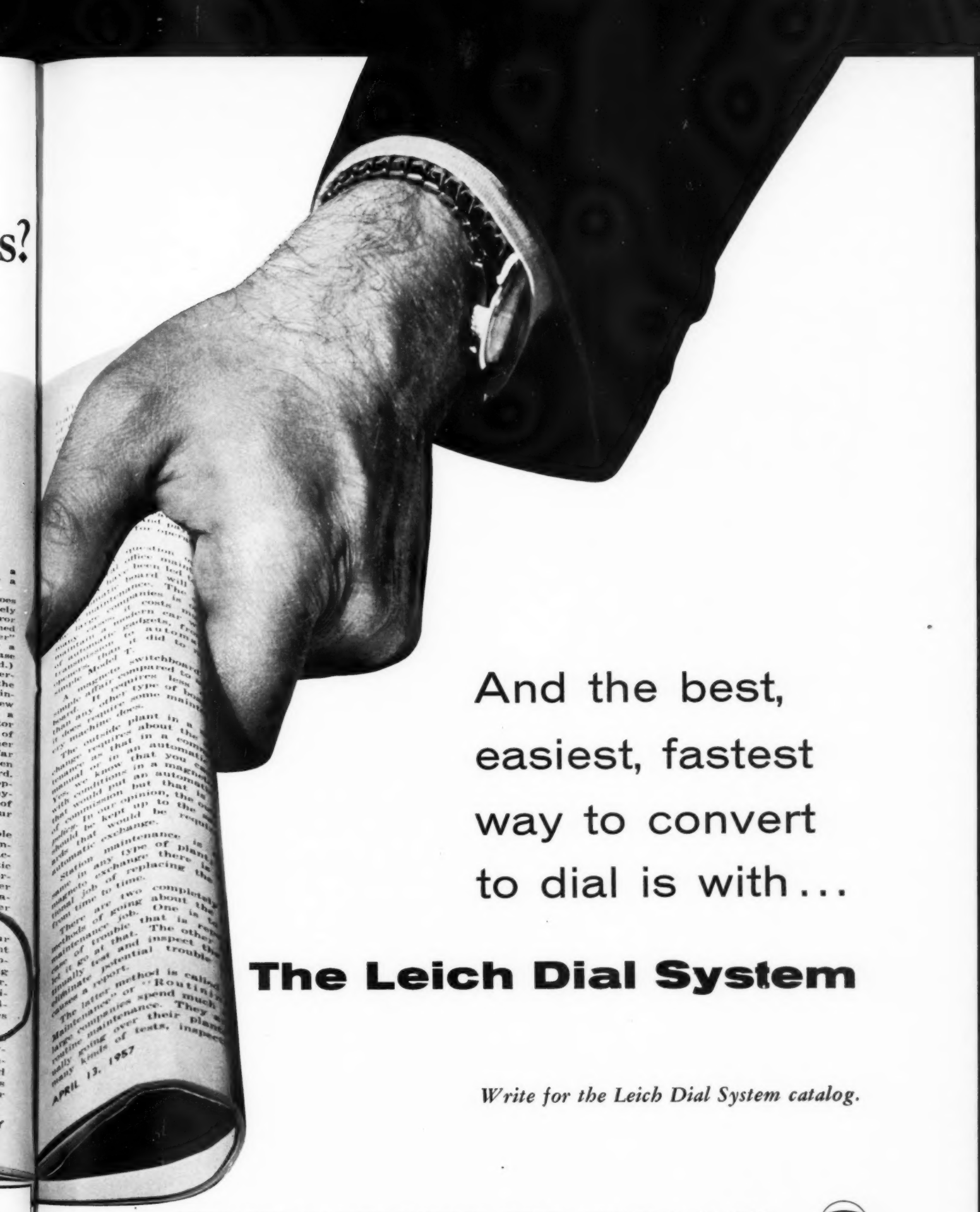

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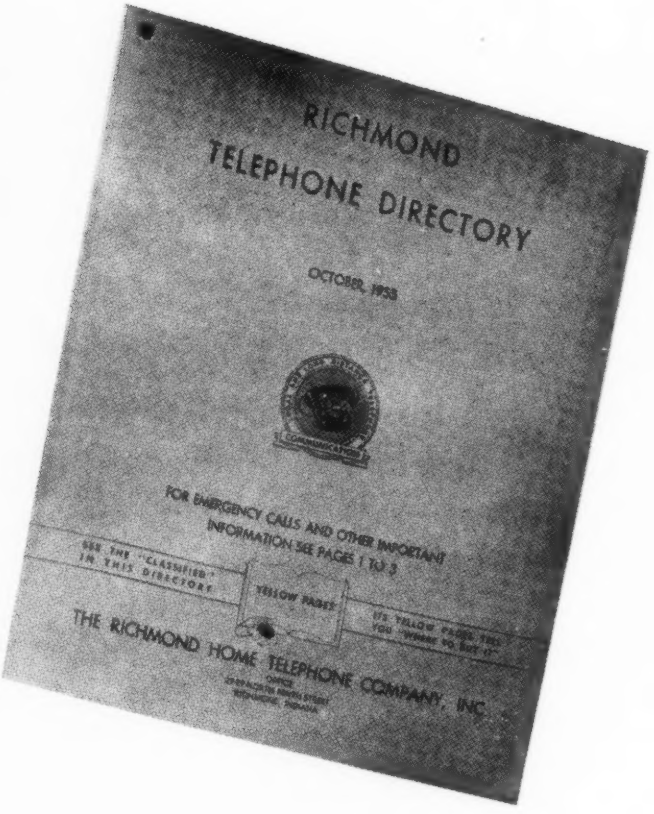
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IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH, WASHINGTON EDITOR

12 states have laws providing reimbursement to utilities for expense of relocation caused by federal-aid highways. Minnesota law requires commission to consider current cost in setting rate base. Appellate court rules wire-tapped evidence collected by non-federal persons can be used in a federal court.

THE BOX SCORE on new laws in the states to permit telephone companies and other public utilities to obtain some reimbursement for the expense of relocation due to construction of federal-aid highways now stands at an even dozen, with one of those very doubtful (because of a possible veto). Here is the list which—at this writing (May 10)—includes two laws approved but not yet signed by state governors: Florida (?), Georgia (publicly-owned utilities only), Idaho, Massachusetts (1956), Minnesota, Montana, New Mexico, North Dakota, Oklahoma, Rhode Island (?), Tennessee and Utah.

The two question marks after the states of Florida and Rhode Island indicate that the governors had not signed the bills before this correspondent's deadline. But advance information from Florida indicated that Governor Collins would probably do so. The advance news from Rhode Island, however, was doubtful — "very doubtful." It will be noted, however, that the Minnesota law (reported in this department last week as being in doubt because of a possible veto) is now on the statute books by reason of Governor Freeman's signature.

Speaking of Minnesota Governor Freeman's signature brings up another very interesting piece of state legislation of concern to the telephone companies. This is a revision of the state law regarding rate-making for telephone companies. The Minnesota statute is somewhat unusual because the state commission does not have much rate-making authority *except* over telephone companies and local transportation carriers. The gas and electric utilities in Minnesota are not regulated.

But the Minnesota commission has had, for many years, rate-making authority over telephone companies and has used it in the past in such a way as to restrict the telephone company rate base to original cost. There was nothing in the law that required the Minnesota commission to do this, and nothing which forbade the commission to do it, either. Until the new law recently signed by Governor Freeman was passed, Minnesota had a typical, old-fashioned, wide open statute which required the commission to fix "reasonable" rates.

But under the new law passed in the final hours of the Minnesota legislature that state will have a very modern, if not unique, rate-making statute. This new law imposes on the commission the duty to consider three different alternatives of value in determining a proper rate base for telephone rate-making. One of these is the original cost of the telephone property when first devoted to public service. The second standard is the cost of the property when acquired by the telephone company now operating it. But it is the third standard which put Minnesota into the column of "fair value" states. This requires the commission to consider "current value."

In other words, the Minnesota commission is now instructed to use a triple combination of valuation standards: Original cost, aboriginal cost, and current value. In effect, this would be something like the New York statute for telephone company rate-making, which the New York legislature refused to change at its recent session, notwithstanding much pressure from Governor Harriman of that state. It will be interesting to see how the Minnesota commission applies its new law in forthcoming Minnesota telephone rate cases.

Tapping the Wires

For many years there have been two different rules of evidence in criminal courts about tapping telephone wires. One of these, known as the federal rule and consistently used in federal courts, throws out evidence in criminal prosecution which has been obtained by tapping telephone or telegraph wires or otherwise unlawfully intercepting confidential communications in violation of the Federal Communications Act.

This antiwire-tapping rule of evidence has been very broadly construed to mean not only evidence which a policeman might directly hear over a wire-tapped line concerning somebody's wrongdoing, but it also includes any evidence which could otherwise be used by the prosecution, but which stems from (or was first learned about through) wire tapping.

Thus, an apparently innocent telephone call by a government stenographer in Washington to a gentleman friend in New York, making an appointment for a meeting, resulted in throwing out the government's entire case against a woman accused of being a Russian spy. It turned out that the telephone call set up a rendezvous with the Russian agent, at which federal officers were able to catch her with the goods. But all to no avail, because the original "lead" or "tip-off" happened to come from a tapped wire.

Many of the state courts have followed a different rule. They are inclined to look upon federal restrictions on evidence in such grave cases as being a bit soft-headed. And so wire-tapped evidence was used to good avail by Thomas A. Dewey when he was district attorney in New York in con-

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victing racketeers. It is doubtful if they could have been convicted—some for even murder—in any other way.

But, what happens when evidence is obtained by telephone wire tappers who are not federal agents and have no connection with the federal police or prosecuting authority? Can evidence collected by local city or state police, or other non-federal persons, be used in a federal court? This apparently is a new question. In any event the Second U. S. Circuit Court of Appeals has ruled that such wire-tapped evidence can be used even in a federal court, nothwithstanding earlier U. S. Supreme Court decisions to the contrary.

The three-man appeals court noted that it was setting a precedent in its unanimous decision. It ruled that the wire-tap evidence was permissible because no federal officers had been involved in obtaining it. The evidence had been obtained by New York city police, acting within state law but still in clear violations of the Federal Communications Act, the court held. The case was that of a defendant, who was convicted last October of possession of bootleg alcohol in violation of the Federal alcohol tax laws.

Police obtained a court order to tap the defendant's telephone, on the belief that he was dealing in narcotics. When they intercepted him as a result of tapped conversation, however, they found the alcohol in his car and the Treasury Department was notified. "The case is important as we are called upon to formulate a rule to govern the admissibility in federal court of evidence obtained by state officers in violation of the Federal Communications Act," Judge Harold R. Medina wrote. The decision was joined by Judges Sterry R. Waterman and Clarence G. Galston.

The court held that the federal government cannot use evidence which it has obtained through illegal means, but need not be prohibited from using such evidence when it was obtained by state officers operating entirely on their own account. The Federal Communications Act prohibits any person not authorized by the sender from revealing a communication intercepted by a wire tap. The U. S. Supreme Court has held over the years and through recent cases that such evidence may not be used in federal courts.

The conviction of the government girl spy was overturned by two appellate courts because the government admitted it was led to the actual evidence submitted against her by information obtained through tapped telephone calls. The bootlegger decision would not affect that ruling, since federal agents were involved in those taps. The bootlegger decision does point up, however, a basic conflict between the federal statute and New York State law, which permits the tapping of telephone wires by law enforcement agencies under court order. The opinion stated that "by tapping the wire, intercepting the communication and divulging at the trial what they heard, New York police officers violated the federal statute."

REA Loans Go to Three States

Rural Electrification Administration approved four rural telephone loans the week of April 29 which will benefit subscribers in rural areas of three states, the U. S. Department of Agriculture announced on May 7. The loans, totaling $801,000, will enable the borrowers to offer initial service to 973 farm families and improved service to 953 subscribers in Iowa, Mississippi and North Dakota. Details of the loans follows:

Colo (Iowa) Telephone Co.; $196,000, first loan (April 29).

The Colo company is now furnishing common battery and magneto service to 432 rural subscribers. This loan provides funds to convert the existing system to automatic operation, to improve service for the present farm families, and to furnish initial service for 20 other rural subscribers.

The borrower expects to construct an automatic central office and headquarters building in Colo.

A. Paul Henry is president and manager of the Colo Telephone Co.

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Bruce (Miss.) Telephone Co.; $369,000, first loan (April 29).

The borrower will use these funds to convert its existing system, serving 349 rural subscribers, to automatic operation, and to furnish initial service to 660 farm families without telephones. At present, the company is furnishing common battery service.

The company expects to construct an automatic central office in Bruce, and to lease headquarters facilities there.

Harry E. Waller is president and manager of the Bruce company.

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Bowman-Slope Rural Telephone Mutual Aid Corp., Bowman, N. D.; $31,000 third loan (April 29).

With this loan, the borrower plans to furnish new and improved service for 36 subscribers in its service area. Six of these are farm families without telephones. The others are switchers who plan to disband their own lines as soon as the cooperative's service is available. The borrower is planning to provide service without toll charge between its Amidon exchange and the town of New England, N. D., which is served by Northwestern Bell.

The three REA loans totaling $1,030,000 will enable the borrower to offer new and improved service to 1,118 rural subscribers. The system will consist of exchanges at Amidon, Bucyrus, Ladd Rhame and Scranton. The latter three are now in operation.

Arvy Eales is president and Victor O. Sorsdahl is manager of the Bowman-Slope telephone cooperative.

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Noxapater (Miss.) Telephone Co., (mailing address: Decatur (Miss.) Telephone Co.; $205,000, first loan (May 2).

The borrower now provides common battery service to 142 rural subscribers. It will use the loan to convert its system to automatic, and to add facilities to serve 287 rural families. The company proposes to construct a new automatic office in Noxapater.

William D. Bailey is president and manager of the Noxapater company.

Red Communications Union

The red-tainted American Communications Association, which was kicked out of the CIO for its communist leadership, has no standing in the telephone industry. But it still has an 8,000 membership, about three-fourths of which is concentrated in local offices of Western Union Telegraph Co. The Senate Internal Security Sub-committee has been pecking away at the

American Communications Association off and on ever since fears were expressed (during World War II and thereafter) that it was a weak link in our national security because it resulted in leftish personnel having some access to the nation's telegraph communications.

Early this month, the Senate Internal Security Sub-committee had another hearing on this matter and heard a Western Union wire chief testify that in time of war communist saboteurs could knock out a major part of New York's communications system. He pointed out that about 80 per cent of Western Union land-line workers in that area are members of the American Communications Association.

Joseph J. Lenahan, a New Jersey wire chief for Western Union, told the Senate sub-committee that this situation presents a "great potential for sabotage in time of war." The subcommittee, after hearings last year, reported that communist leadership in the American Communications Association presents an "indisputable present danger" to this country's defense communications. The union was expelled from the CIO in 1950.

The Western Union technician said that the best means of "putting our communications out of business" would be by pouring acid on the principle cables. In New York, he added, "it would take weeks or even months" to repair the damage. This would include lines carrying classified messages for the United States Army, Air Force, and other defense agencies, he said.

In answer to a question on espionage possibilities, Lenahan said, "There is hardly a man" in Western Union who does not have access to messages, but that only about 50 have access to classified circuits. He added, however, that "I do not know of anyone giving information to Communists."

A Defense Department security official, Robert L. Applegate, told the Senate sub-committee that the government can prevent such a communications worker from having access to classified information. But, if he continues with the facility, Applegate stated, he still constitutes a "potential threat to our security."

1957 Convention Calendar

Association	*Date*	*City*	*Hotel*
Communications Section, Association of American Railroads	May 21, 22 and 23	Toronto, Ontario, Canada	Royal York
Illinois	May 22 and 23	Peoria	Pere Marquette
Kansas-Missouri*	May 27 and 28	Kansas City, Kan.	Town House
Pennsylvania	June 4 and 5	Buck Hill Falls	Buck Hill Falls Inn
Maine-New Hampshire-Vermont*	June 4, 5 and 6	Portsmouth, N. H.	Wentworth-by-the-Sea
California	June 5, 6 and 7	Los Angeles	Ambassador
Washington-Oregon*	June 13, 14 and 15	Spokane, Wash.	Davenport
New York	June 17, 18 and 19	Schroon Lake	Scaroon Manor
Alaska	Aug. 26, 27 and 28	Kodiak	Elks Club
Tennessee	Sept. 12 and 13	Nashville	Hermitage
Arkansas	Sept. 16 and 17	Hot Springs	Arlington
Michigan	Sept. 17, 18 and 19	Grand Rapids	Pantlind
Rocky Mountain	Sept. 18, 19 and 20	Salt Lake City, Utah	Utah
West Virginia	Sept. 30 and Oct. 1	Davis	Blackwater Lodge
North Carolina	Oct. 3 and 4	Pinehurst	Carolina
USITA (Annual convention)	Oct. 14, 15 and 16	Chicago	Conrad Hilton
Virginia	Oct. 24 and 25	Roanoke	Roanoke
South Carolina	Nov. 4 and 5	Clemson	Clemson House
Alabama-Mississippi*	Nov. 11 and 12	Birmingham	Thomas Jefferson
Georgia	Nov. 13 and 14	Albany	Radium Springs
Oklahoma	Nov. 21 and 22	Oklahoma City	Huckins
Florida	Dec. 2 and 3	Miami Beach	Balmoral

*Joint Conventions

Russian Taxes

Do Russians have an "income tax?" This was a rather unusual question which was fired at your correspondent after our own annual agony of mid-April (formerly the Ides of March). What prompted this question was the recent action of the Soviet Government in baldly repudiating all obligations for repayment of the so-called "voluntary" bond issues which the Russian workers have bought over the last 20 years out of their hard earned rubles. Of course, that is something entirely different from an income tax. The official propaganda of the Kremlin, at the moment, is to the effect that there will be no more bond issues to be repudiated.

But, it is not generally known that the Soviet union does have an income tax and that, percentagewise at least, it is fairly reasonable compared with our own. In fact, the top rate (13 per cent) is considerably lower than our federal income tax minimum (20 per cent). Large family exemptions and other exemptions are fairly liberal so that a good many Soviet citizens do not have to pay an income tax at all.

But, this would be a false picture of the real tax liability in Russia today. Unlike the U. S. Federal Government, which has no other substantial source of revenue except taxation, the Soviet Government has its main source of income in the "people's business"—every kind of business. Since there is no other kind of business (to amount to anything) done in Russia except by state-owned monopoly, everything the citizens contribute when they pay for food, clothing, rent, or make other purchases (over and above the production cost of these items) is in effect a government tax which might be comparable with the sale tax used by many of our states.

There are no exemptions to this universal sales tax. There is no holding out for charity, education, or religious enterprises, and no specific exemptions for medicines, baby food, or what is needed for the blind, aged, or crippled. Everybody who buys anything in Russia pays this tax, which cannot be computed percentagewise. But, it must be enormous for the Russian government to finance its gigantic armament, tanks, guns, planes, submarines, guided missiles, atom bombs, and all the rest.

The best evidence of the burden of this disguised tax on the average Russian citizen is the toll it takes from him in terms of his labor and many of the things which he cannot hope to afford at all. Working two weeks for a pair of shoes, one to two months for a dress or a suit of clothes, and half a day for barely enough food to sustain a man and his family is a gretty good indication of where the workers' money is going, and how much, in Russia.

There is, however, one situation in which the Russian government might be setting us a good example—if only

(Please turn to page 46)

Georgia Tech Unit Plans Two-Year Course In Telephone Technology

Southern Technical Institute considers short-term training program to fill large gap between skilled tradesman and the research and design engineer.

By W. R. HALSTEAD and R. N. EDWARDS*

THE TELEPHONE industry and Southern Technical Institute are inviting high-school graduates to their marriage. The father-in-law, Mr. Necessity, has brought his shotgun. The marriage must be well blessed with issue to relieve the shortage of well-trained personnel at the technician's level in the telephone business.

The telephone industry in recent years has felt the results of the lack of qualified technically trained people. To answer this need, Southern Tech is considering the establishment of a full two-year course in telephone technology at the terminal technical institute level. This school, which has pioneered technical-institute training in the Southeast, prepares graduates to fill the large gap between the skilled tradesman and the research and design engineer.

Previously, the use of four-year trained engineers to do technicians' work has materially contributed to the shortage of engineers needed to fill the design and research positions. But in the future trained telephone engineering technicians can relieve the four-year engineer in most of the operating capacities. Or they should be able to advance in supervision to such positions as commercial manager and chief engineer for the smaller installations.

The proposal for training at Southern Telephone Institute comes out of conferences and explorations made by the United States Independent Telephone Association, the REA, TELEPHONY, and others interested in the need for additional telephone technicians and engineers.

A number of engineering firms also have expressed an interest in additional technical training for personnel.

There are approximately 4,500 Independent telephone companies, many of them in the process of expanding and conversion to dial service. REA has pointed out the critical shortage of engineers and technicians, and the need among its borrowers as well as on its own staff.

Southern Technical Institute (STI) is a permanent, full-time, two-year, co-educational boarding college offering terminal technical institute training. The college operates as a unit of the Engineering Extension division of the Georgia Institute of Technology.

STI is fully accredited by the Engineers' Council for Professional Development and offers Associate in Science degrees in Building Construction Technology, Civil Technology, Electrical Technology, Electronics and Communications Technology, Gas Fuel Technology, Heating and Air Conditioning Technology, Industrial Technology, Mechanical Technology, and now it proposes to add Telephone Technology.

In addition to conducting these regular college courses, Southern Tech has for the past seven years served industry directly by conducting short-term training programs on a contract basis.

Such courses as radar fundamentals for Lockheed Aircraft and Air Force Cadets, and Radio License courses for Southern Bell Telephone & Telegraph Co., Chesapeake & Potomac Telephone Co., Ohio Bell Telephone Co., and American Telephone & Telegraph Co. have been conducted successfully.

Programs in closed-circuit television and central office equipment are in process of development.

STI offers courses in telephony as part of its requirement for graduation in Electrical Technology and Electronics and Communications Technology. Many graduates have already begun careers in the telephone industry. But with the proposed establishment of the full course of study in telephony, trained telephone engineering technicians will find many more opportunities in the industry.

The course in Telephone Technology would require 120 quarter-hours credit for graduation and the Associate in Science degree. The student without advance credit would complete this course in two school years or 18 calendar months.

*Mr. Halstead is head of Electrical and Electronics Departments and Mr. Edwards is an instructor in the Electronics Department of Southern Technical Institute.

W. R. HALSTEAD

R. N. EDWARDS

The course would be divided so that 62½ per cent of the students' time is spent in the classroom and 37½ per cent in the laboratory.

The course would provide (1) general training in the technical sciences of mathematics and physics; (2) general training in English, human relations, supervisory training, technical writing, public speaking, business law, and economics; (3) specific training in electrical circuits, instrumentation and test equipment, electrical drafting, telephone transmission lines, central office equipment, automatic equipment, automatic toll equipment, installation, design and maintenance of telephone equipment, outside plant, carrier systems, radio and microwaves, utility accounting, surveying, mechanics, and traffic analysis.

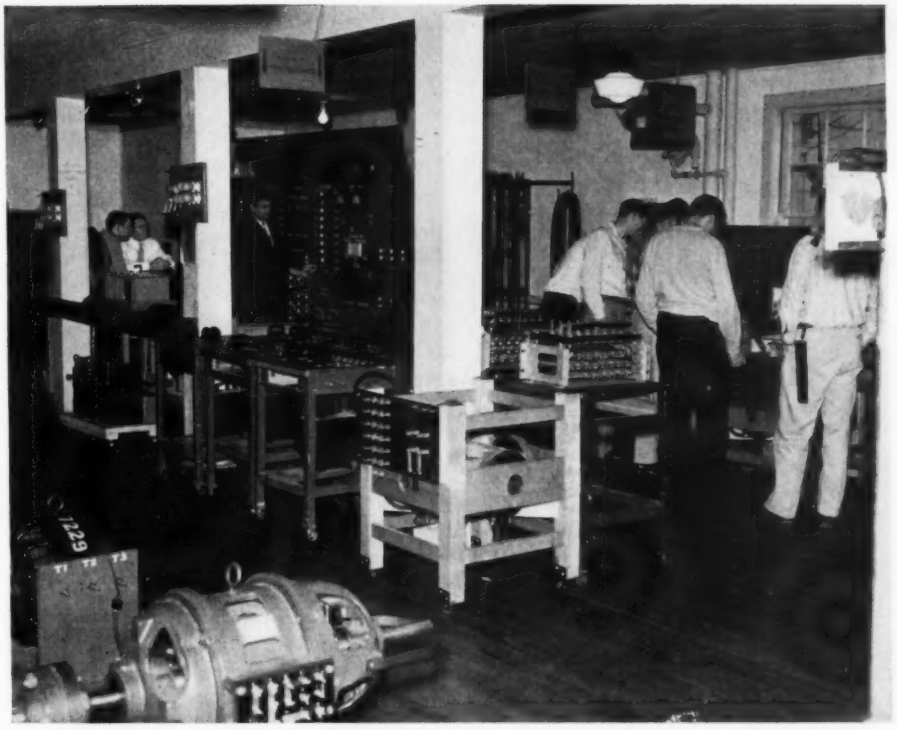
The proposed Telephone Technology curriculum is arranged as follows:

FIRST QUARTER	*C	*L	*T
T.Dr.111 (Tech. Draw. 1)	0	6	2
T.Eng.111 (Comp. & Rhetoric)	3	0	3
Ind.T.111 (Human Relations)	3	0	3
T.Math.111 (Algebra)	5	0	5
T.Phys.122 (Electricity)	5	3	6
Total	16	9	19

SECOND QUARTER	C	L	T
Elec.T.111 (Elec. Meas.)	0	3	1
Elec.T.121 (AC Circuits)	5	3	6
T.Eng.112 (Comp. & Rhetoric)	3	0	3
T.Math.112 (Trig., Analytic)	5	0	5
T.Phys.121 (Mechanics)	5	3	6
Total	18	9	21

THIRD QUARTER	C	L	T
Elec.T.122 (A.C. Circuits)	5	3	6
Elec.T.131 (Basic Electronics)	5	3	6
T.Eng.231 (Technical Writing)	3	0	3
T.Phys.123 (Heat, Sound, Light)	3	3	4
Total	16	9	19

L. V. JOHNSON, director of Southern Technical Institute



Students and instructors at work in one of Southern Tech's 11 electrical and electronics laboratories.

FOURTH QUARTER	C	L	T
Civil T.122 (Mechanics of Mat.)	5	3	6
Civil T.121 (Elem Surveying)	3	6	5
Elec.T.241 (Comm. Circuits)	5	3	6
Ind.T.226 (Economics)	3	0	3
Total	16	12	20

FIFTH QUARTER	C	L	T
T.Dr.231 (Electrical Drawing)	0	6	2
Elec.T.264 Radio & Microwaves)	3	3	4
Elec.T.291 (Dial C.O.E. Tech.)	5	3	6
Elec.T.292 (Traffic Technology)	3	0	3
Ind.T.243 (Business Law)	3	0	3
Total	17	12	21

SIXTH QUARTER	C	L	T
Elec.T.293 (Carrier System)	5	3	6
Elec.T.295 (Interference & Prot.)	3	3	4
Elec.T.296 (Tel. System Tech.)	5	3	6
T.Eng.221 (Public Speaking)	3	0	3
Ind.T.261 (Seminar)	1	0	1
Total	17	9	20

*C means class contact hours per week.

*L means laboratory contact hours per week.

*T means total quarter credit hours.

The proposed course will provide training in the field of applied telephone engineering and, therefore, the applicants for the course must be high school graduates whose credits include two in algebra and four in English.

Entrance requirements also include scores from the mathematical and verbal sections of the College Entrance Examination Board's Scholastic Aptitude Test.

Additional information concerning registration dates, tuition costs, and other details may be obtained by writing W. R. Halstead, Head, Electrical Department, Southern Technical Institute, Chamblee, Georgia.

EDITOR'S NOTE: ***TELEPHONY salutes the Southern Technical Institute for its interest in establishing a full course study in telephone engineering. For several years, this publication, realizing both the lack of and the need for straight telephone engineering courses, has urged the industry to cooperate with educational institutions in setting up such courses. If our activities have had any influence in the steps leading to the establishment of Southern Tech's course, we are pleased.***

However, whether or not Southern Tech's Telephone Technology course gets off to a good start and is maintained, depends upon the number of students that enroll. We suggest that all telephone companies inform their local high school officials of Southern Tech's course, and also urge any high school graduates, who might be interested in the telephone business, to investigate and to consider taking the course.

Also, we suggest that telephone companies might want to consider having some of their employes, who need further technical training, take the Southern Tech course.

THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITORIAL DIRECTOR

WITH FURTHER reference to the various items that have appeared on this page recently concerning the "dancing" or vibration of plastic cable suspended on messenger strand, Lowell E. Brown, of the Valley Telephone Co., Silverton, Ore., gives us the following report on his experience with this problem:

"We have installed something over 10 miles of plastic cable, ranging in sizes from 16 to 26 pairs, all on ⅝-inch messenger strand. This cable is all 300-foot spans, joint construction with the power company.

"We have experienced considerable trouble as a result of this cable dancing during 40-mile crosswinds.

"At the time of vibration, the midpoint of the span remains approximately stationary and the quarter points go up and down in an alternate manner so as to create a terrific vibration of the power pole.

"Our experience indicates that there are only two satisfactory methods of preventing this vibration. One is to separate the cable from the strand, and the other is to wind the cable around the messenger strand.

"We are using the separation method by hanging the cable from the strand with cable rings rather than the spinner method.

"Other companies in our area have experimented with winding the cable around the strand before it is spun and have found that this method, also, proves quite effective."

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It appears that toll operators at the present time are not following the book in all cases. We have noticed some who call for Mr. Jones and don't advise that he has a call from Chicago, but will merely ask where he can be reached. They may then ask when he will be back in a rather abrupt manner.

Certainly this is not a good practice nor one that will create good will for the telephone company.

We contend that if these operators will first advise that Mr. Jones has a call from some distant point, they will receive better cooperation from the party who answers the call.

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Owners of high fidelity phonograph equipment are familiar with the fact that records become worn and produce distorted sounds if the tone arm weighs more or less than is specified. Every tone arm is designed for something known as "optimum tracking force." Checking the deviation from this prescribed force was formerly a complicated procedure.

Now when the hi-fi record player develops trouble, it is a simple matter to check the stylus or needle force during the playing of a record. This is accomplished by the use of a device known as the Weathers Stylus Force Gauge which indicates the gram weight or force. The gauge is used by hooking it under the tone arm and lifting it. When the sound of the record is interrupted, the gauge indicates the stylus force at which the tone arm is operating.

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A double meter of new design has recently been placed on the market which should prove most useful in electroylsis testing. This instrument reads 2.5 millivolts to 300 volts dc. It is housed in an oak case 9 inches x 10 inches x 4½ inches and weighs only 6 pounds.

One meter ranges 2.5-5-10-50-100-500 millivolts full scale, at a sensitivity of 2,000 ohms per volt. The other meter ranges .3-1-3-10-30-100-300 volts at a sensitivity of 50,000 ohms per volt.

The range change is accomplished by a multi-position rotary switch which also provides an "off" or open position. Both meters are accurate to 1 per cent of full scale.

With this two-meter unit, simultaneous readings of fluctuating voltages and currents are possible. The zero center type of meter avoids polarity confusion and also aids in simultaneous and rapid readings of fluctuating polarity, voltage and currents.

When the source of the voltage is of high resistance, it is possible by simple calculation to arrive at the open circuit voltage where test is being made. The millivolt meter with the 2.5 millivolt range provides an extremely low range reading without the use of potentiometer or vacuum tube voltmeter.

The high current sensitivity introduces a very small load on the source being measured, and in most instances the reading will deviate little or none from the true open circuit voltage.

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The writer spent several nights in a tourist court at Las Cruces, N. M., recently. The room was first-class in all respects, and we had a fine swimming pool at the front door.

Added to the numerous luxuries, the room was equipped with a Chinese red dial telephone. Also, this little desert town has the 2-5 numbering system.

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A new miniature dry cell designed for use in miniaturized equipment has a nominal rating of 1.5 volts.

It develops 60 milliampere-hours to a cutoff voltage of 1.3. The top average current drain recommended is 60 microamperes.

This dry cell weighs only 1/20 ounce, is 0.44 inch in diameter and ⅛ inch thick.

It will withstand shock, vibration and acceleration. Its present application is to power the electric wrist watch and it will last for a year in this service.

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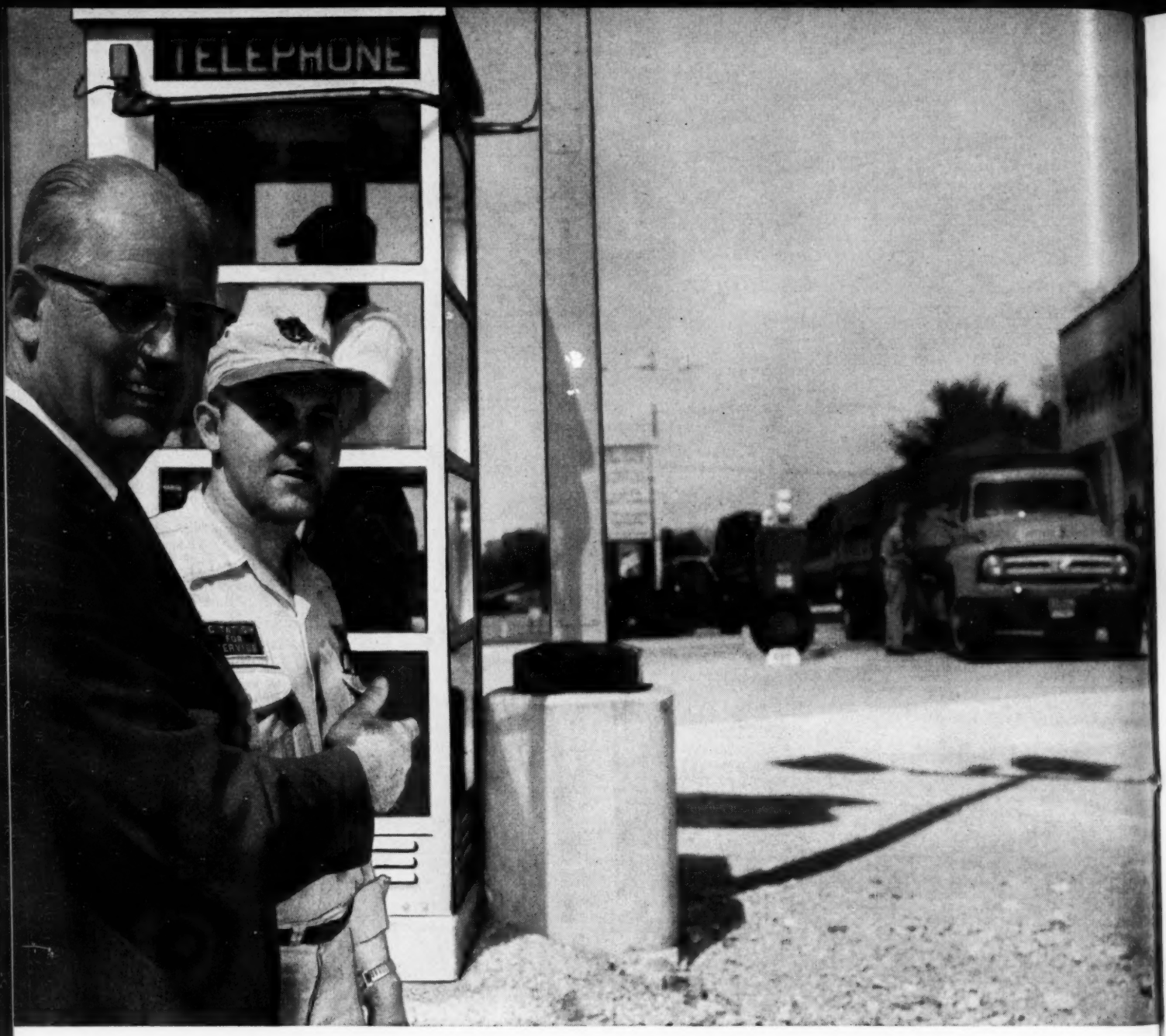
It has been said that philosophy is the system of being unhappy intelligently.

XUM

You get low cost
-and top performance, too
when you string
Copperweld
TRADE MARK
O-Eighty-Thirty
TELEPHONE LINE WIRE
Copperweld* O-Eighty-Thirty gives you excellent conductivity, complete rust-resistance and permanent high strength for safe, long-span rural construction. As a result, your subscriber loops and secondary toll lines will perform better, last longer, require less maintenance and cost less over the years. And as a bonus value, Copperweld is the only high-strength wire suitable for future conversion to carrier. For prices, sag data and staking tables, write us today.
*Trade Mark
COPPERWELD STEEL COMPANY
WIRE AND CABLE DIVISION
Glassport, Pa.
For Export: COPPERWELD STEEL INTERNATIONAL COMPANY, New York
Copperweld
O-Eighty-Thirty
TELEPHONE LINE WIRE
Diameter .099"
30% Conductivity
STOCKED AND SOLD BY LEADING DISTRIBUTORS



Donald F. Anderson, General Manager of the Geneseo Telephone Company, Geneseo, Illinois, and Mr. Donald M. Little, the gas station owner on whose property an Alcoa Booth is installed, look on as a trucker uses the booth to report to his express line. Geneseo is 150 miles due west of Chicago on U.S. Route 6. Many of the town's 5,000 residents commute to the nearby Tri-City area of Davenport, Rock Island and Moline.

"SEEMS LIKE EVERYBODY WANTS ALCOA BOOTHS!"

Reports Donald F. Anderson, of Geneseo Telephone Company

"Since our town is located right on U.S. Route 6, we get a lot of transient motorists and truckers passing through," says Donald F. Anderson, General Manager of Geneseo Telephone Company, Geneseo, Illinois. "Local businessmen such as gas station, restaurant and motel owners frequently request that we install an Alcoa® Outdoor Booth on their property. As one service station operator put it when he asked for a booth, 'If we can get 'em stopped, we stand a good chance of selling 'em something'."

Geneseo Telephone Company now operates seven outdoor booths, five of which are of Alcoa manufacture, and plans to add more Alcoa Booths. There has been some door-closing trouble and glass breakage with the two non-aluminum booths, but performance of the Alcoa Booths has been trouble-free.

"As a matter of fact," says Manager Anderson, "before putting up these Alcoa Booths, we were very much afraid of vandalism. Actually, we have had no cases of damage of any kind."

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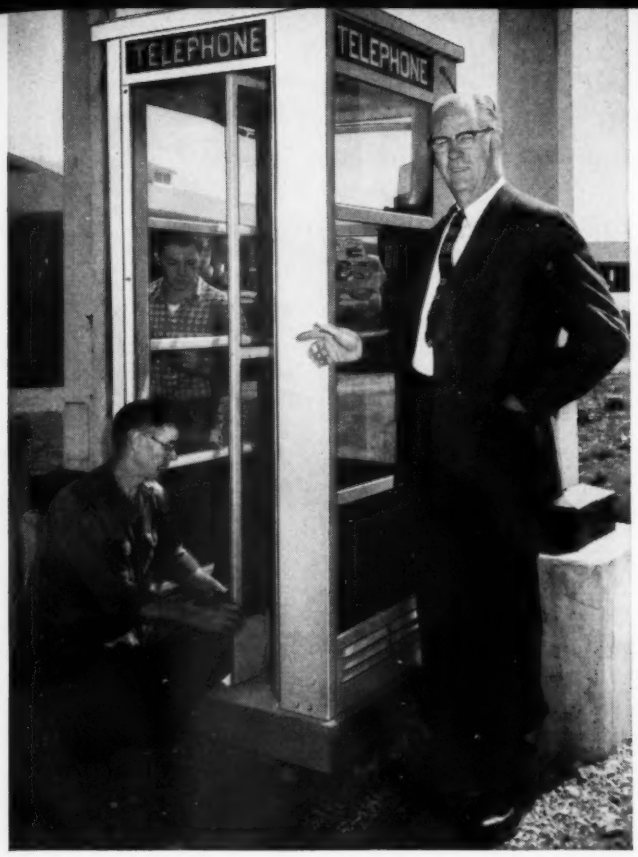

"ASSEMBLY INSTRUCTIONS ARE EASY TO FOLLOW" . . . says Geneseo Telephone Company General Manager, Donald F. Anderson. "Our men take about four hours to erect a booth. The first one assembled takes the most time. After that, the men hardly need to refer to the instructions at all."

"ALCOA BOOTHS DON'T TAKE UP MUCH ROOM on the property owner's land," says Manager Anderson, "yet the booths are big on the inside. Even when the ladies are shopping and are loaded down with packages, there's plenty of room on the inside to use the telephone."

"WE'RE PUBLIC RELATIONS CONSCIOUS at Geneseo Telephone Company," says Don Anderson, "so we were glad to get a free Alcoa Goodwill Kit with our new booths. The kit contained radio and TV commercials, publicity articles, newspaper ad mats and bill enclosures."

"OUR BOOTHS EARN $75 TO $85 A MONTH on the main road," says Mr. Anderson. "We feel at least 50 to 60% of this is new business that we wouldn't otherwise obtain. The revenue shoots way up in the summertime when tourist traffic through our town is the heaviest." Shown here is cashier, Mrs. Richard King, depositing coins with William H. Bean, bank teller.

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TROUBLE CLEARING

What Is Most Vital Part of Magneto Exchange?

By L. N. MARTIN

IN THE HUMAN BODY there are certain organs that are necessary to life. Probably all will agree that the heart is the most important of these, for if the heart stops, all other organs cease to function in a matter of minutes or seconds and the unfortunate person involved experiences what a telephone man would call a "Total Service Failure."

What part of a telephone plant can quickly cause a total failure?

This depends on the size and type of exchange. In a large office there are several such vital parts but these are so carefully guarded that a total failure of a large exchange from internal causes is very very rare. (There are of course failures from external causes such as tornado, hurricane, flood, and fire from an adjacent building.)

Among the smaller offices—community dial and one to three-position manual offices—we have seen entirely too many total failures. Part of this trouble is due to lack of forethought and advance planning, but we are afraid that some of the smaller companies do not realize that a total failure (from an internal cause) is a disgraceful affair and one that will hurt the reputation of the company.

This article will be confined to the magneto exchange of which there are an estimated 4,500 still in service and each of which is vitally important to the community which it serves.

In a large manual office the loss of one position is not serious. In a two-position office the loss of one position during the busy hours is a very serious handicap.

In a one-position office (and a majority of magneto offices are one-position) *if the position is out, the exchange is out.* We should therefore turn our attention to circuits that are common to the position.

In a magneto board there are three common circuits: the Operator's Telephone Circuit, the Ringing Circuit, and the Night Alarm Circuit.

While trouble in the night alarm circuit is important, it does not cause a total service failure, so we will not discuss it at this time.

PART 56. The preceding article in this series appeared on page 24 of the April 13 issue.

The ringing machine is not critical in a magneto office because each position is equipped with a hand generator. If the ringing machine fails during a busy hour, the operators may get quite a workout but the service should not be seriously affected.

However, we saw one total ringing failure in a magneto office. It was a one-position board with about 50 lines; hence a ringing machine was not considered necessary. The hand generator had served faithfully for many years and had evidently not been inspected for some time.

One day the shaft broke and the operator could no longer ring. Later the investigation disclosed that the shaft had pressed against the edge of a metal plate and had worn nearly through before it broke.

The maintaining office was about 30 miles away. The operator waited for a call to come in from that office and called the Plant Department. While waiting for the repairman, she answered calls and explained the situation to the subscribers.

After this incident the company installed a generator in a box on the side of the board, repaired the old generator, and installed a key so that either generator could be used. *Every board, no matter how small, should have two sources of ringing power.*

There is a possibility of trouble in the key shelf wiring that would affect the ringing but this trouble is not common. We will discuss it later in this article.

We now come to what we believe is the real "heart" or most vital part of the magneto switchboard: the OPERATOR'S TELEPHONE CIRCUIT."

In a one-position board, if the operator's telephone circuit is out, the exchange is out. It is a very simple circuit and yet we hear of many such failures.

This writer has made many trips, one of them 100 miles one way, to rescue exchanges which were out of service due to trouble in the operator's telephone circuit.

We believe that every telephone man who is responsible for a magneto exchange should thoroughly learn this circuit; take certain steps to prevent its failure, and plan in advance what he would do if it does fail.

In most magneto boards the operator's telephone circuit is exactly like the circuit of a magneto telephone except that the listening key takes the place of the switchhook. It uses the same simple two-winding induction coil. This is a handy thing to remember. If the induction coil should fail and no spare is on hand, just borrow one from any magneto telephone.

A few boards may have an anti-sidetone or a sidetone reduction circuit which uses a three-winding or a four-winding coil. In this case a spare should certainly be kept on hand.

Where is a good place to keep this coil so that it can be quickly found when wanted? Why not mount it in the board adjacent to the regular coil so that it may be cut into service by transferring the wiring from one coil to the other?

The battery supply also is an important item. There are two screw lugs or terminals in the back of the board, usually marked "Opr.Tel.Bat.," to which the battery is connected. Since the circuit is the same as that of a magneto telephone, it is possible to use two dry cells for this purpose. However, this is a very poor method.

The telephone battery in a switchboard is subject to almost continuous use for many hours each day. Now a dry cell is not designed for this kind of service. It is intended for "intermittent" use. A continuous drain may "polarize" a dry cell so that it completely fails until it is given a chance to recuperate.

Also, the total hours of service given by a dry cell under a more or less

constant drain are very much less than when the cell is used intermittently. In one case we found it necessary to replace the battery every third day.

Now unless spare cells are kept where the operator can find them and she knows how to connect them, a battery failure may totally interrupt the service. Furthermore, a battery failure is often preceded by many hours of poor transmission before the cause is discovered. Also, dry cells are by no means cheap these days and where they must frequently be replaced this may be the most costly means that the company could use to supply power for the operator's transmitter.

A storage battery and rectifier are by all means the best. However, in the case of the one-position board with no other use for the battery, its installation may not be justified.

If the office has carrier equipment, repeater equipment, an emergency ringing machine and/or emergency lights that require a battery, it can certainly be proved in.

If the board has three or more positions, a storage battery should by all means be used. Some companies always use a storage battery for a two-position board.

The storage battery may be 6-volt (three cells), 24-volt (11 cells), or 48-volt (22 to 24 cells) depending on the voltage requirements of the other equipment connected to the battery.

If the battery is used for the operator's telephone, only the three-cell battery should be used. The current requirement is only about .03 amps. per position; therefore, a very small two-plate cell is all that is required. These are inexpensive and require no elaborate maintenance routine as they are "expendable."

The rectifier is a simple selenium or copper oxide affair that requires very little maintenance. Since the load is practically constant, the "trickle charge" method may be used.

If the storage battery cannot be proved in, the next best solution is a primary battery that is especially designed for continuous service.

There are a number of such cells on the market. One is the primary cell. Another is the so-called "Air Cell."

These cells last much longer than dry cells and they are not damaged and their life is not shortened by a continuous drain. They give a more reliable service at a lower cost than dry cells, for this particular use. These cells should not be placed inside of the board, but installed in a box or on a shelf near the board.

When any type of primary cell is used in a multi-position office, there must be a separate battery for each position. On the other hand, one storage battery may be used for any number of positions and also carry any miscellaneous load desired. However, in this case a change must be made in the operator's telephone circuit to regulate the current and to prevent cross talk between the positions.

This change consists of the addition of a retardation coil in series with the primary circuit of each position. The resistance of this coil prevents too much current from flowing through the transmitter and its high reactance at voice frequencies prevents cross-talk between the positions.

The type of coil to use will depend on the voltage of the storage battery. The company which made your board should be able to supply the correct coil for your particular battery voltage. The coil is easily installed locally.

The operator's jack and plug is not a likely source of trouble except that wires are sometimes broken off at the jack terminals or a loose connection may develop at this point. However, the jack and plug are subject to wear and they should be inspected often enough so that they can be replaced before trouble develops.

At one time, magneto boards were equipped with a suspended or swinging transmitter and a head receiver with a two-point plug and jack. The swinging transmitter caused poor transmission as the mouthpiece was often as much as 18 inches from the operator's lips. It was also a hazard in that it could strike the operator in the face.

If any of these swinging transmitters are still in use, they should be replaced with a standard light-weight operator's head set without delay. If the operator's jack is two-conductor, it must be replaced with a four-point jack.

There are two types of operator's plugs and jacks. One uses a twin plug, each of the two plugs having tip and sleeve conductors. The transmitter circuit is connected to the two tips and the receiver circuit to the two sleeves; therefore, the plug may be inserted either side up.

The other type has four solid (one-conductor) plugs in a row. The two inside plugs are used for the transmitter and the two outside plugs for the receiver (or vice versa). The headset cord is four-conductor as the transmitter and receiver circuits are entirely separate.

Some boards have a four-point jack and are wired for either a swinging transmitter or a standard headset. The transmitter punchings on the jack and the punching in the top of the board, to which the cords of the swinging transmitter are attached, are wired in series and the ones not used are strapped out (short circuited).

To change from swinging transmitter to head set: Cut the strap at the jack and strap out the punchings in the top of the board.

What if the headset goes bad? A city telephone man would say: "Just plug in a spare." In a large exchange, each operator has her own headset which no other operator uses, and there are also a number of spares.

However, in a one-position magneto office, it is very common to find only one headset which all the operators use. *If that headset is out, the exchange is out.* We have seen this happen many times. For goodness sake, a company certainly should be able to afford two headsets!

If not, wire up an ordinary subscriber's handset with a four-conductor cord and four-point plug for emergency use. This is also a good set for periods of light traffic when the operator does other work away from the board.

In this connection, we will mention an interesting case of trouble. A small company with a one-position board had at last discarded their swinging transmitter and purchased a modern headset (just one). They were well pleased with this.

The cord finally became frayed and noisy and was replaced by the local repairman. However, he made the mistake of transposing one transmitter conductor with one receiver conductor. This sets up a peculiar circuit.

The current from the two dry cells, after going through the primary winding of the induction coil and the transmitter, must go out on one side of the line, through the distant telephone and back on the other side of the line before it returns to the other pole of the battery. Quite a job for a 3-volt battery!

The transmitter current was very weak, and the longer the line the weaker the current. The operator could hear fairly well but soon got hoarse trying to make the subscribers hear her; on long lines, it was impossible for her to make herself understood. The exchange was practically out of service. That was the case that this writer drove 100 miles to clear.

Trouble in the wiring of the operator's telephone circuit almost always involves a wire off or a loose connection at some item of equipment, such

(Please turn to page 42)

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Ohioans Shown "Tomorrow's Progress Is Today's Planning"

By Dan S. Fargo

A NEAR CAPACITY crowd of more than 550 delegates and guests met in Columbus, Ohio, on April 15-17 at the Deshler Hilton Hotel for the 62nd annual convention and equipment exposition of the Ohio Independent Telephone Association.

Theme of the 1957 convention, presided over by Weldon W. Case, president, of Elyria, was "Tomorrow's Progress Is Today's Planning." Speakers, in their talks, stressed the fact that the new electronic arts in the field of telephony will create more jobs, more skills and more customer satisfaction.

Principal speaker at this year's convention was Donald C. Power, president of both the General Telephone Corp. and the United States Independent Telephone Association. In his talk (which appeared in full in the May 4 issue of TELEPHONY), Mr. Power told his audience that "It is a sobering fact that our telephone industry, within barely three quarters of a century from its birth, is now handling by far the greater part of the entire load of really important personal and business communications in the United States.

"Bell and Independent companies," he said, "are now handling daily telephone conversations in the order of 200 million calls—more than double the volume handled at the end of World War II in 1945."

Speaking on the subject "Planning Today for Tomorrow's Progress," Mr. Power said the Independent companies are situated in a favorable position for future business growth, if it is properly cultivated. He pointed to subscriber stations growth in Ohio as proof that such a development is well underway.

Planning in business is not always a popular job, Mr. Power said. It has sometimes been called a systematic way of looking for trouble. He suggested four categories worthy of special attention in plans for future progress—plant, financing, and revenue requirements, and new business promotion.

Mr. Power also pointed out that planning is everybody's job, in every part of the telephone business. He said:

"Too often, some of us may be inclined to look on planning as the exclusive responsibility of top-level management—something for the front office to worry about. But when we get right down to hard facts, management is usually at the receiving end of the raw data, the statistics, the estimates, the timetables, and proposals which must be contributed in the first instance from the operating and specialized branches of the industry.

"The engineers and research experts, the accountants, the financial and regulatory experts—these are the people who know from actual experience what can be done.

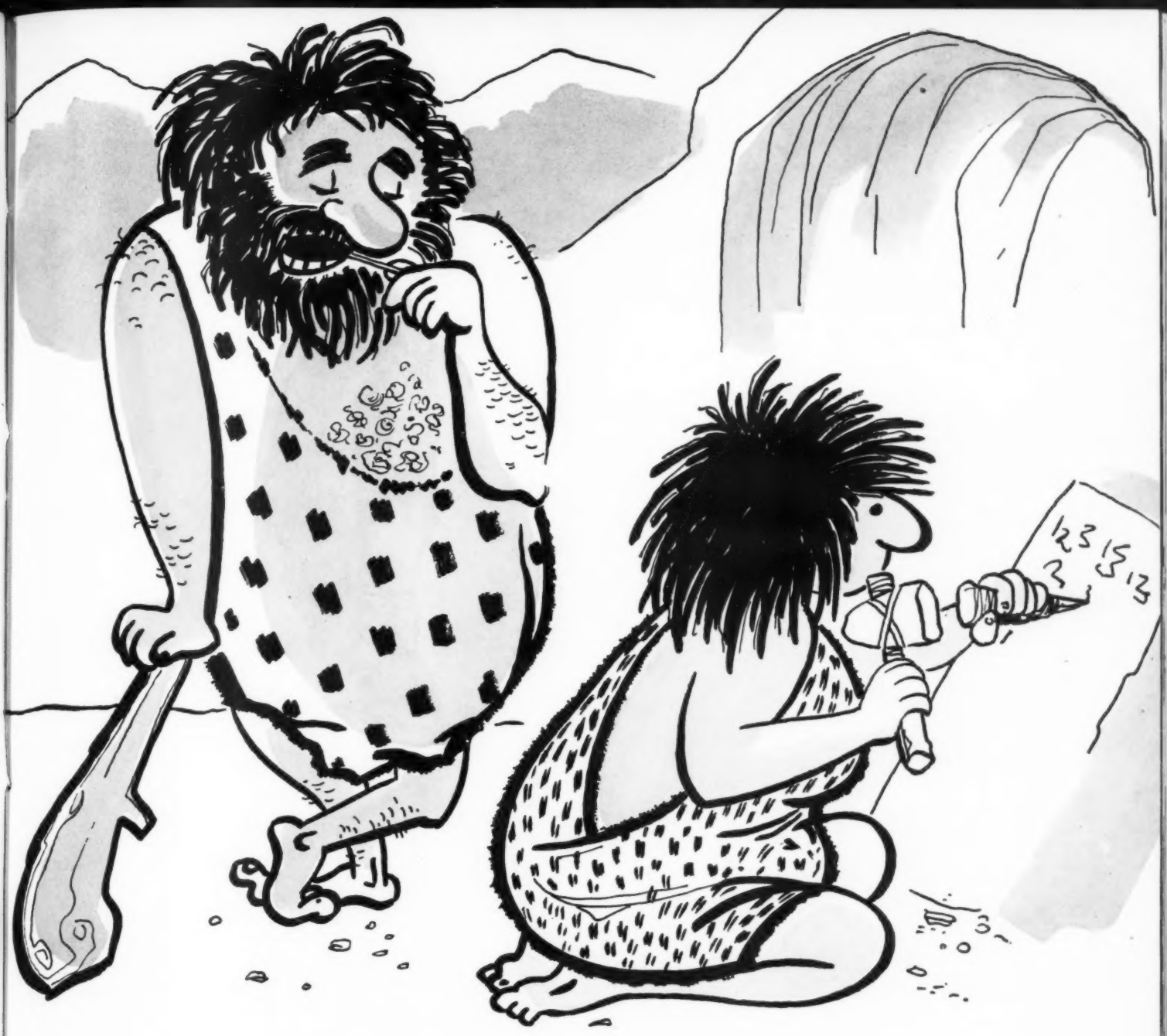
"True, the end result, the final decision on planning must be that of a company's management. But that usually takes the form of a translation and coordination of the ideas and proposals passed along by others without which management could not make sound decisions.

"So, I repeat, planning is everybody's job to a certain degree."

The business sessions featured a series of conferences of the accounting, commercial, plant-equipment and traffic groups.

Speakers at these conferences in-

Representatives of companies which won the Ohio Independent Telephone Association's annual community service award plaques were (left to right): Richard H. Rawlings, vice president, General Telephone Co. of Ohio, Marion; Robert P. Kaufman, vice president, Continental Telephone Co.; Weldon W. Case, president, Elyria Telephone Co.; James C. Hageman, vice president, Lorain Telephone Co.; Raymond J. Maxwell, general manager, Mansfield Telephone Co.; Paul Kaufman, public relations director, Northern Ohio Telephone Co., Bellevue; and Clare E. Williams, president, Ohio Consolidated Telephone Co., Marion (also president of General Telephone Co. of Ohio).



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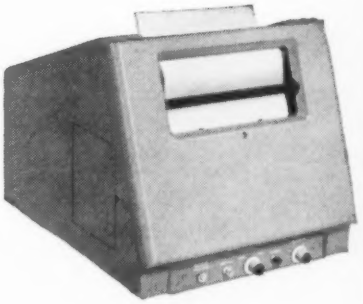

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cluded Robert H. Henderson, controller; Joseph Sharp, installation supervisor, and Marvin R. Johnston, commercial engineer, all of the General Telephone Co. of Ohio, Marion; Baxter H. Case, manager, Chardon Telephone Company; Dr. Laurence J. Taylor, vice president, Hillsdale College, Hillsdale, Mich.; Rolf G. Till, plant manager, Wellington Telephone Co., and W. W. Tripp, plant personnel supervisor, Cincinnati & Suburban Bell Telephone Co.

Also James I. Hunt, president, Home Telephone Co., Middlefield; Otto F. Kinsel, plant engineer, Northern Ohio Telephone Co., Bellevue; F. H. Wood, plant superintendent, Western Reserve Telephone Co., Hudson, and J. L. Robb, executive vice president, Superior Cable Corp., Hickory, N. C.

Also, Miss Helen Clark, traffic superintendent, Commonwealth Telephone Co., Athens; A. C. Zeller, toll traffic engineer, Gustav Hirsch Organization, Columbus, and J. H. Leckenby, traffic superintendent, Northern Ohio Telephone Co.

President Case, in his talk titled "Our Industry Comes of Age," cited evidence of strides forward taken by the industry since 1951—for example, the rapid rate of conversions to dial service, and the inaugurations of Direct Distance Dialing.

He pointed out that the need for capital to continue providing the facilities necessary for serving the public will remain great for some time to come. At the same time, competition from other sources for the investor's dollar will be even greater than it has been in the past. He went on to say:

"The greatest single problem which will confront our industry in the immediate years to come is that of attracting sufficient sums of capital to accomplish the great task at hand.

"A company's ability to raise capital is directly influenced by its earnings and it will be necessary that we envision an entirely new concept with respect to the adequacy of telephone company earnings. As you know, in our state we are entitled by statute to earn a reasonable rate of return on our invested capital based, of course, on the reproduction cost new of our facilities less the observed depreciation.

"The reasonable rate of return in recent years has been construed to have a mythical ceiling of 6 per cent. This will not be adequate in the immediate years to follow, nor is it adequate today.

"When the price of debt money was in the neighborhood of 3 per cent and the price of equity money was 5 per cent, taking into consideration the federal income tax effect, a 6 per cent return was adequate.

"However, today we find our companies paying 4½ to 6 per cent for their debt money and approximately 6 per cent for all equity, so that in order to survive it will be absolutely mandatory that our companies strive for a rate of return between 8 and 9 per cent. This is still considerably under the figure which manufacturing companies in general industry feel to be adequate in the matter of rate of return."

Edward Hegarty, management consultant, Mansfield (left), guest speaker at the final luncheon of Ohio Association's 62nd convention, shows James I. Hunt, newly-elected president of the Association, and Daniel W. DeHayes (right), association executive vice president, cover page of his chart talk, "Human Relations in Management."

Mr. Case added that, in a recent address before the Great Lakes division of the National Association of Railroad & Utility Commissioners, a vice president of The Irving Trust Co. of New York, made the observation that it was the opinion of industrial leaders that unless a venture were to produce a 25 per cent return before taxes or 12½ per cent after taxes on the invested capital that the particular venture was not worthwhile.

As a result, Mr. Case emphasized, it will be necessary in the coming years to compete for dollars with corporations who earn excessively greater returns on their investments. This subject will be under great discussion in the coming months and the telephone industry has a responsibility of educating the using public, together with the regulatory bodies, as to the seriousness of the situation.

In his executive vice president's report, Daniel W. De Hayes gave a brief summary of the progress made in the last 10 years by Ohio's Class A companies (which comprise 94 per cent of the total Independent stations in the state).

Telephone plant in service for the Class A companies has risen from $48,578,000 (in 1946) or $149 per station for the then 390,000 stations to $167,605,000 (in 1956) or $251 per station for the 712,000 stations.

Gross revenues in 1946 were $13,204,612 or $43.66 per station, while in 1956 they were $48,421,391 or $74.48 per station—an increase of 70 per cent per station.

Number of telephones increased 82.6 per cent in the 10 years, and number of dial telephones rose from 61 to 81 per cent of the total, Mr. De Hayes reported.

He also mentioned that state-wide distribution of the Ohio association telephone industry booklet had been accomplished in the past year, including 80,000 sent to member companies. Also, an Ohio telephone exchange map in eight colors, showing nearly 600 exchange boundaries, was distributed early this year.

Enlargement of the circulation of the association's publication, *The Independent Call*, to 3,500 was effected, too, he said.

Everett H. Krueger Jr., chairman of the Ohio Public Utilities Commission, in his talk emphasized that the

(Please turn to page 36)

Yes sir, Penta-treated poles sure are clean and easy to handle

Chuck stood looking at the new pole for a minute, then he took a swipe at it with his hand and held it up for me to see. Told him I didn't see anything, but he replied that was just the point. Said these were the cleanest poles and crossarms he'd ever worked with.

I told Chuck that's because they're treated with Penta, and that Penta-treated wood is clean and easy to handle. Penta keeps rot and termites out, too—makes poles and arms last years longer. That means fewer replacements later on and makes things easier for Chuck and me all the way around.

Chuck said he hoped we'd be using Penta-treated poles and arms from now on. I said we most likely will because they don't cost any more than poles and arms treated with ordinary preservatives.

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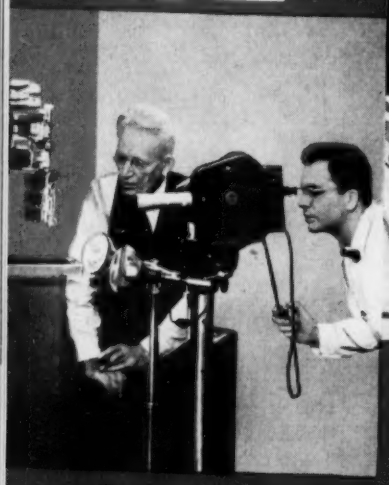

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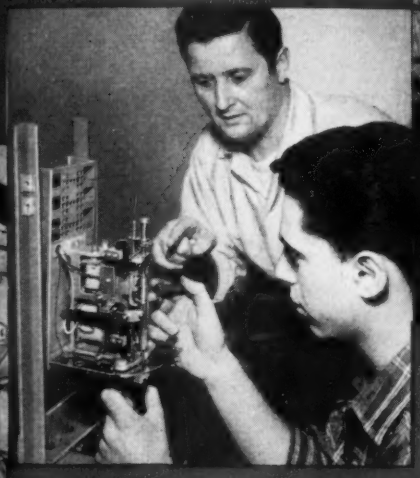

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commission is a service agency as well as a regulatory agency.

He urged Independent companies to petition the commission for rate relief before a company's rate of return sinks too low.

"The signs are evident that our industry is entering into the era of full-fledged use of electronics," said Robert R. Dobbin, chief engineer, Stromberg-Carlson Co., in introducing his talk, "What Electronic Switching Promises for the Independent Telephone Industry."

Mr. Dobbin urged that those who want to be prepared for developments in the future should gradually get switching and maintenance personnel schooled in "matters electronic."

As an example of a possible switching device of the future, he cited the cryotron, a device developed at the Massachusetts Institute of Technology. He explained:

"This device is a switching element which makes use of a principle discovered over 50 years ago—that a magnetic field applied around a wire will affect the resistance of the wire.

"At very low temperatures, 4° above absolute zero, a piece of ordinary wire has super conductivity—essentially zero resistance.

"Now if a magnetic field is generated around this wire at the low temperature the superconductivity is destroyed and the wire has a definite resistance. This on-to-off ratio of impedance is sufficient to make the device a useful switch.

"Probably you are questioning the 4° Kelvin requirement. This is reasonable. Nevertheless, liquid helium is available, in a device known as a cryostat, at a relatively low cost, which produces this temperature. Thus, a possible switching element is being developed.

"These developments lead me to feel that a good switching element will be available soon which will operate electronically and which will not require the fuss and clatter and wear of an electromechanical contact.

Mr. Dobbin also mentioned that line concentrators are becoming increasingly important; and since they are often pole-mounted and are fed power over a cable pair, it is seen that size and power drain are important. He stated that the use of transistor switching in this application "could pay dividends."

Judge Earl R. Hoover, Cleveland Court of Common Pleas, entertained the group at the convention banquet with his talk on "OK—It's the Bunk, or So You Want to Be a Politician." The judge strongly urged listeners to take part in politics. He said, "Politics can get better if you people get in and make it better."

On the final day of the convention, delegates attended a panel program, "PUCO Viewpoints," moderated by Ohio Public Utilities Commissioner Ralph A. Winter. The panel was composed of four staff members of the commission, namely Paul E. Weiland, chief engineer; James L. Fullin Jr., attorney examiner; Edward E. Knaub, chief accountant, and Clyde J. Reid, supervisor, rate section.

Five members of the Ohio Public Utilities Commission comprised a panel presenting "PUCO Viewpoints." Left to right are panelists Edward E. Knaub, chief, accounting section; James L. Fullin Jr., attorney examiner; Weldon W. Case, president of the Ohio Association, introducing Commissioner Ralph A. Winter; Paul E. Weiland, chief, engineering division; and Clyde J. Reid, supervisor, rates-utilities. (In foreground is map of Ohio telephone exchange areas.)

Questions asked of the panel included: how should colored telephone rates be set up in rate schedules? and, should a flat charge or monthly rental apply to the colored instrument?

Final speaker was Edward J. Hegarty, management consultant from Mansfield, O., who spoke on "Human Relations In Management."

As one of the features of the closing day of the convention, community service award plaques were presented to seven Ohio Independent telephone companies. Those receiving the award included The Elyria Telephone Co., The Mansfield Telephone Co., Northern Ohio Telephone Co., Bellevue; The Lorain Telephone Co., Ohio Consolidated Telephone Co. and General Telephone Co. of Ohio, both of Marion; and Continental Telephone Co. Presentation of the awards to executive representatives of these companies was made by the OITA president, Weldon W. Case.

Awards were made to those companies judged to have performed the most outstanding jobs of improving public understanding of the Independent telephone industry during the past year. Entries were judged by members of the Columbus chapter of the Public Relations Society of America.

Delegates elected six members to the board of directors for three-year terms. The six include Raymond J. Maxwell, general manager of the Mansfield Telephone Co., as a new member of the board, and (the other five re-elected for a new term) William C. Henry of Bellevue; Ralph F. Mateer of Warren; J. Warren Safford of Troy; R. R. Waltz of Delta; and Howard Wright of Ashtabula.

The directors elected James I. Hunt of Middlefield, as president; H. F. Clapper of Greenville, vice president, and Daniel W. DeHayes of Columbus, executive vice president and secretary-treasurer.

Ohio Pioneers Form Buckeye Chapter

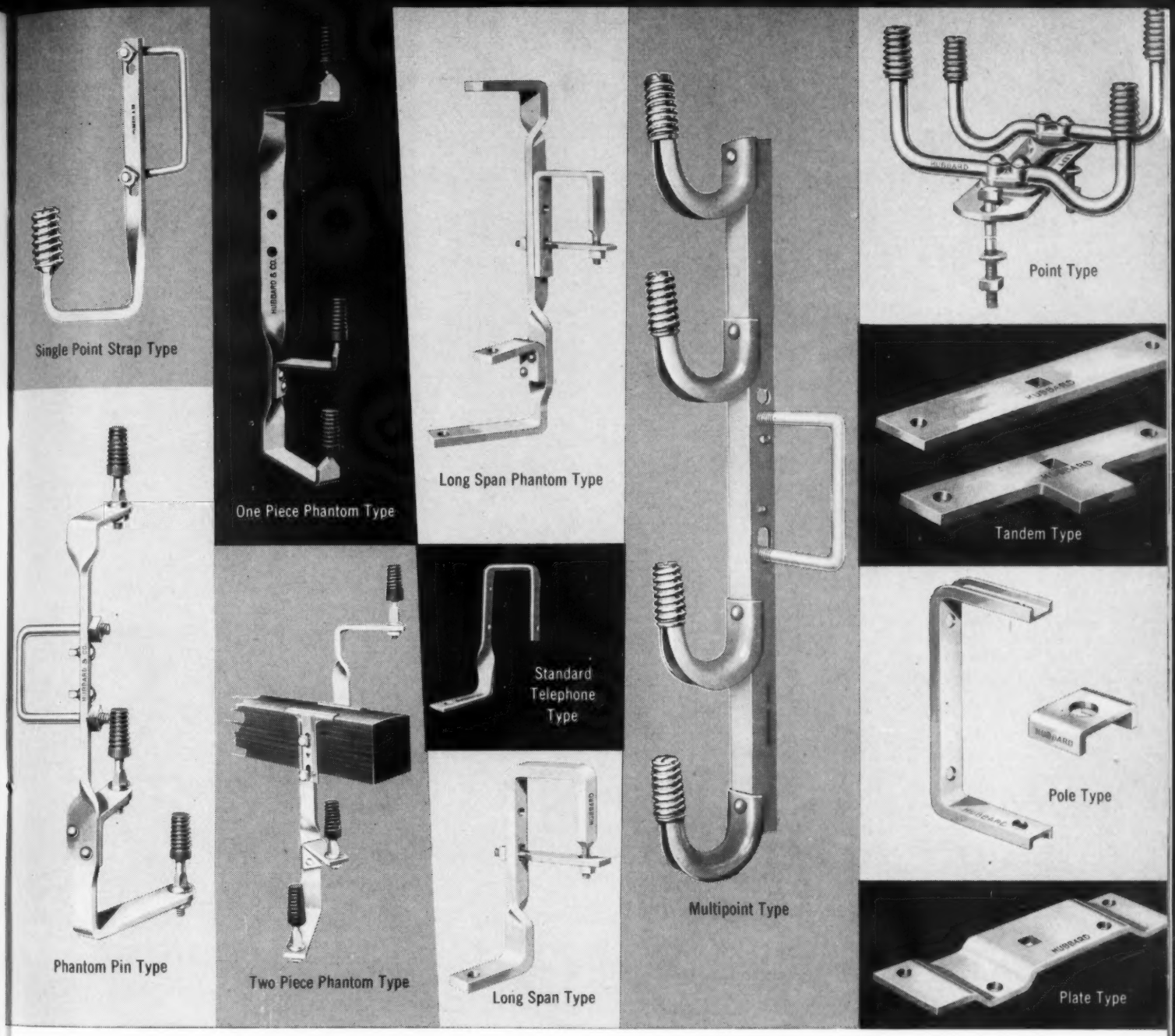
On the evening of April 15, an organizational meeting was held to form the Buckeye Chapter of the Independent Telephone Pioneer Association.

Richard N. Cole, general commercial superintendent, General Telephone Co. of Ohio, Marion, acted as chairman of the organizing committee and presided over this first meeting of the group.

Chapter officers elected were: President, Warren Safford of Troy; vice president, Paul Kaufman of Norwalk, and secretary-treasurer, Vernon Hershey of Warren.

Hope and Vitality

"Hope will make thee young; for hope and youth are children of one mother."—SHELLEY.



TRANSPOSITIONS? Hubbard has them!

No matter what your transposition problem, there is a Hubbard Bracket specifically designed to fit the job. From the standard under arm single circuit style to the newest precisely balanced point types, Hubbard transposition brackets are easy to install, and give low cost, trouble-free service under the most adverse operating conditions.

Hubbard's complete line of Hardware for the Telephone Industry is carried in stock nationally by more than 200 distributors, men whose business it is to know and service local needs. You are sure of an ample stock of the right sizes and combinations. Call your Hubbard distributor for his help and assistance on your line construction and maintenance problems.

HUBBARD AND COMPANY

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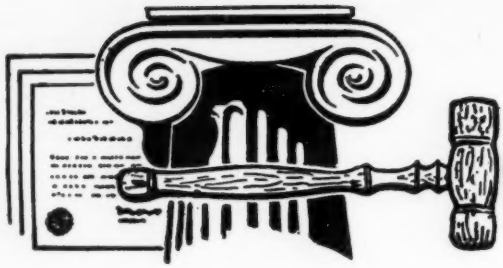

Courts and Commissions

Rejects Kansas Company's Plea to Cease Business

The Kansas Corporation Commission rejected the Irving Telephone Co.'s application on May 1 to cease business July 1 in the Blue Valley area, some of which will be inundated by Tuttle Creek reservoir, it was reported (TELEPHONY, April 27, p. 72).

Commission Chairman Marion Beatty said that "it is a bad situation," and that about 120 customers outside the reservoir area would be left without telephone service if the company were allowed to quit business.

"When this company was granted a certificate of convenience," Mr. Beatty said, "it was allowed a monopoly to serve the territory and must do so until it is allowed to cease business."

About 60 customers have moved from the reservoir area in the past two years and another 102 will be flooded out when the dam in finished.

General of Cal. Registers $20,000,000 in Bonds

General Telephone Co. of California, Santa Monica, registered with the Securities & Exchange Commission 20 million dollars of first mortgage bonds to be sold at competitive bidding, it was reported on May 6.

The company reported proceeds from the issue, due June 1, 1987, would be used to repay short-term banks loans and to finance construction.

The company sold its last bond issue on Sept. 11, 1956. It paid a 4.48 per cent net interest cost on 20 million dollars of 30-year 4½ per cent first mortgage securities.

Georgia Commission OKs Rate Raise, Financing

The Georgia Public Service Commission on April 16 extended approval to the application of the Darien Telephone Co., Inc., for a $100,000 20-year loan from Stromberg-Carlson Co., to be used in conversion to dial service.

The company was authorized to issue 250 shares of its $100 par value common stock in exchange for proprietary equity of the Darien Telephone Co.; also to issue 74 shares of its $100 par common stock in exchange for existing indebtedness of the company.

The commission also approved the following rate raises at its Darien and Eulonia exchanges, which will produce net revenues of $9,468.84 or a 6.7 per cent return on rate base of $141,147.34.

	Old	*New*
One-party business	$5.00	$6.50
Two-party business	4.00	5.50
Four-party business	3.00	4.25
One-party residence	3.25	4.25
Two-party residence	2.75	3.50
Four-party residence	2.25	3.00
Rural multi-party:		
Business, 0-2 miles	3.50	4.25
Residence, 0-2 miles	2.75	3.25
(For each additional 2 miles or fraction thereof)	0.25	0.25
Urban mileage:		
Each ¼ mile or fraction thereof beyond the base rate area:		
One-party	——	0.40
Two-party	——	0.20
Four-party	——	0.10

General of the SW Gains Two Increases in Texas

The following rate increases became effective in Texas exchanges of General Telephone Co. of the Southwest during April:

Bronte, Conversion to automatic, 329 stations (April 23):

	Old	*New*
One-party business	$7.50	$9.50
Two-party business	6.00	7.50
One-party residence	4.50	4.75
Two-party residence	3.50	4.00
Four-party residence	——	3.50

Naples, Conversion to automatic, 396 stations (April 7):

	Old	*New*
One-party business	$4.50	$10.00
Two-party business	3.50	8.50
One-party residence	2.75	5.00
Two-party residence	2.25	4.25
Four-party residence	——	3.75

Minn. Commission Approves Purchase of Four Companies

The Minnesota Railroad & Warehouse Commission early in May authorized purchases of the following:

Clough Town Rural Telephone Co. by Crow Wing Cooperative Rural Telephone Co.; Ericsburg Telephone Co. by the Minnesota Telephone Co.; Remer Rural Telephone Co. by the Johnson Telephone Co.; the Lake Crystal Telephone Co. by the Crystal Independent Telephone Co. (TELEPHONY, May 4, p. 54).

Ohio Companies Ask Raise, Permission to Finance

The Ohio Public Utilities Commission recently granted to the Lorain Telephone Co. authority to issue first mortgage 25-year 4⅞ per cent bonds, in the amount of one million dollars, and to sell them at the price of 100 per cent of the principal amount.

•

In connection with the recent merger of Western Reserve Telephone Co. and West Richfield Telephone Co., the commission on April 24, authorized issue of first mortgage bonds, due in 1979, in the amount of one million dollars. The bonds were placed with the Lincoln National Life Insurance Co. at a price not less than 100 per cent of the principal amount plus accrued interest to the date of delivery.

•

The Van Wert Telephone Co. has filed for a $46,647 increase to cover an increase in operating expenses.

Virginia Independent's Rate Increase Approved

Roanoke & Botetourt Telephone Co., Daleville, has received authority from the Virginia Corporation Commission to increase rates beginning May 19 (TELEPHONY, April 6, p. 38).

One-party business rates at the Troutville exchange will be raised 50 cents to $14.50, while at Eagle Rock and Fincastle this type of service will be increased $2.50 to $7.50.

OK Nebraska Sale, Raise, Loan; Another Denied Raise

The Nebraska Railway [illegible]nission recently authorized purchase of the Maskell Telephone Co. by the Northwest Nebraska Telephone Co., South Sioux City; this was in addition to purchases of Clearwater Telephone Co., Ames Creek Telephone Co., Obert, and

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Effective May 1, all ANSONIA ANKOSEAL Exchange Cables are fully COLOR CODED in all sizes 6 pr. to 101 pr. in layer construction and in group construction over 101 pr.

Now You Can Have Time-Saving, Money-Saving COLOR CODED CABLE with all the famous ANSONIA ANKOSEAL Performance Characteristics Including:

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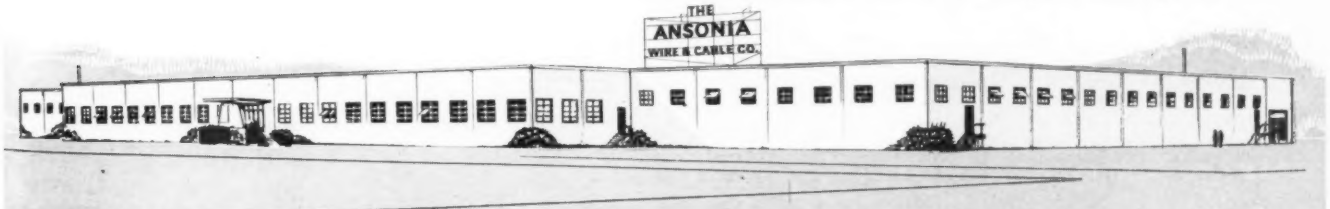
BUILT UP TO QUALITY
NOT DOWN TO PRICE

INDEPENDENT

Complete information and samples on request



THE ANSONIA WIRE & CABLE COMPANY · ASHTON · R. I.

The Oldest Name In Plastic Telephone Cables In The Most Modern Plant Devoted Entirely To Producing Cables.

Beaver Valley Telephone Co., Bartlett (TELEPHONY, May 4, p. 54).

The following net monthly rates were approved effective upon conversion of each exchange to automatic:

One-party business	$7.50
Two-party business	6.75
Four-party business	6.00
Rural business	6.50
One-party residence	5.00
Two-party residence	4.50
Four-party residence	4.00
Rural residence	4.50
Mileage and zone charges:	
One-party, ¼ mile or fraction	.70
Two-party, ¼ mile or fraction	.40
Four-party, ¼ mile or fraction	.25
Service line stations	1.00

The order constituted the commission's official certificate of public convenience and necessity for the Northeast company to serve the areas of the purchased companies.

•

An application of the Northeastern Telephone Co., Elgin, for authority to increase rates and charges was denied recently by the commission (TELEPHONY, Jan. 26, p. 35).

•

On May 7 the Central Nebraska Telephone Co., Blair, asked the commission for authority to borrow up to $275,000 from the Stromberg-Carlson Co. This will be used for proposed conversions to dial service. Permission was also asked for the discontinuance of toll lines between Grant and Imperial, Grand and Verango, Sutherland and Flats, and Sutherland and Hershey.

Two Lifesaving Awards for General of Cal. Installer

"Help, send help right away, someone," was the frantic cry uttered by a San Bernardino, Cal., carpenter as he surveyed his co-worker, Nick Bertoli, who had picked up an electric power hand saw and lay in a prone position convulsed from electric shock.

Next door, Donald Hewlett, installer for the General Telephone Co. of California, was off work and at home. He heard the shout for help and took off on a dead run.

When Don arrived at the scene he saw that Bertoli had already turned black; his breathing had stopped and his arms and legs were contracted. To all appearance he was a dead man, but Hewlett wasn't willing to give up and his first thought was artificial respiration. He turned the victim over on his stomach, told the other workman to hold Bertoli's mouth open, and began his work. In about two minutes the victim began responding and Don continued the treatment for 20 minutes more until breathing was restored to normal.

Donald R. Hewlett (center), installer for General Telephone Co. of California in San Bernardino, accepts the National Safety Council award from George Harrison (left), safety supervisor for General Telephone Co., and the La Croix bronze medal from Edwin M. Blakeslee, president of General Telephone Co. for his heroic action in saving the life of Nick Bertoli, San Bernardino carpenter convulsed from electric shock.

In the meantime, Hewlett had sent his son for blankets and Mrs. Hewlett called an ambulance. A man had been brought back to life by the simple skillful application of artificial respiration. Fortunately, Hewlett had learned this skill in a safety class only one month before the accident.

Recently Hewlett was presented the president's medal by George Harrison, safety supervisor for the General Telephone Co. of California, in behalf of the National Safety Council. He also received the La Croix bronze medal, which is presented to a General Telephone Co. employe for an outstanding action or service. President Edwin M. Blakeslee made this presentation.

Bertoli, who suffered the mishap on Nov. 20, is now fully recovered and according to the attending physician's report, Donald Hewlett is given full credit for saving the man's life.

Obituary

H. L. WINTON, 53, vice president and general manager of the Hendricks County Telephone Co., Clayton, Ind., died on May 3 on his way to a hospital following an auto accident near Coatesville, Ind.

He had been vice president and general manager of the Hendricks County company for 13 years. For several years prior to that time, he had been owner and manager of the Trout Run (Pa.) Telephone Co. Before that he was with the Oklahoma Telephone Co., Broken Arrow, Okla.

He is survived by his wife, Dorothy L., and one son, Henry J., a student at the University of Illinois.

Plan Exchange of Peninsular Stock for General Telephone

Donald C. Power, president of General Telephone Corp., and Carl D. Brorein, president of Peninsular Telephone Co., Tampa, Fla., have announced agreement to a plan whereby the common stockholders of Peninsular Telephone Co. would be offered an opportunity to exchange their common stock for the common stock of General Telephone Corp.

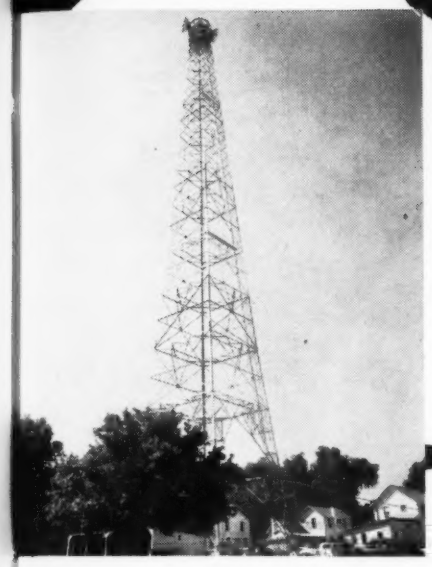
The basis of the exchange would be 1.3 shares of General's common stock for each one share surrendered by the exchanging Peninsular stockholder.

Approval of the proposed plan was voted at a special meeting of General's board of directors on May 8.

The proposed exchange is subject to the registration and prospectus requirements of the Securities Act of 1933. It is expected that General Telephone Corp. will file a registration statement covering the proposed offering which it is hoped can be made within the near future.

OCALA

LEESBURG



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WINTER GARDEN

Blaw-Knox Towers play major role in expansion of Florida Telephone Corporation

As part of a long-range company expansion and improvement program, subscribers of Florida Telephone Corporation now get better, more reliable toll service . . . thanks to new Microwave Carrier equipment, operating from five Blaw-Knox Microwave Towers. The complete Microwave Carrier System was engineered, furnished and installed by Lenkurt Electric Company and Automatic Electric Sales Corporation.

Constantly improving customer service, while keeping a watchful eye on operating economy, has proved a successful growth formula at this Florida utility. In the last ten years, their total telephones-in-service has jumped from 9,000 to nearly 35,000 and the curve is still going upward. At the present time, the company is operating 18 exchanges and 5 sub-exchanges in 8 counties.

We'd like to help you plan better service for your customers. Chances are Microwave is the best answer to your expansion problems. Write today for our new informative Microwave Tower Booklet 2538 which illustrates Blaw-Knox Microwave Towers and describes Blaw-Knox tower engineering, design, fabrication and erection services.

BLAW-KNOX COMPANY

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MICROWAVE TOWERS Blaw-Knox builds guyed and self-supporting type towers for Microwave, AM, FM, TV, Radar, Communications . . . Transmission Towers . . . Special Structures. All custom built to meet your requirements.

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TROUBLE CLEARING

Continued from page 27

as a key. The repairman should know the color code of each wire in the circuit so he will know what to look for.

The pair of wires that is to the operator's telephone circuit what the line is to a telephone set is connected to all of the listening keys. Now this pair cannot be run directly from key to key because that would prevent raising a key above the key shelf for inspection or repair.

The main key shelf form is at the back of the key shelf and a branch of this form is brought out to each key. The wires which are common to all the keys—such as the talking pair which we are discussing—come out of the form to the first key at one end of the shelf (left or right) and are soldered to the proper punchings on that key.

Then another pair of wires (same color) is soldered to those same punchings and goes back through the same key form to the main form and out the branch form that serves the second key, etc. Thus, in the case of these common wires there are always two wires on each lug (except at the last key), which helps to identify these wires.

A common wire off a key punching disables all keys past that point and may or may not affect the key at which the open is located, depending on which of the two wires (on the same punching) is open.

Open wires within the forms are very rare but sometimes occur where the form is bent or twisted each time the key shelf is raised. If a test definitely shows that a wire is open in the form, do not tear up the form to locate it. Cut both wires of the bad pair dead at both ends and lace a new pair of wires (same color if you have it) neatly along the outside of the form.

In addition to the listening key common, there is a pair of wires which when shortcircuited closes the battery circuit. This is connected to a third pair of contacts in each listening key so that the battery is used only when a listening key is opened. The ringing pair is strapped through the keys in the same manner. It often has heavier insulation than the other wires or insulation of a different type.

What color code is used for each of these three circuits in your board? Do the key shelf commons feed from the left or from the right in your board? Do you have more than one headset?

What type of induction coil is used in your board? Are you using dry cells for the Opr.Tel.Cct? How long do they last? Have you figured the cost? *It pays to know your board.*

Citizens Utilities of Cal. Announces Appointments

D. H. Steele, assistant vice president of Citizens Utilities Co. of California, announced recently the appointment of A. W. Powell to the post of assistant general manager and Marlin L. Brown as general commercial manager.

A. W. POWELL

Mr. Powell will replace D. L. Oestreicher who has been on temporary assignment from the Citizens Utilities Co. home office in Stamford, Conn. Mr. Oestreicher will return to the Stamford administrative staff of the company. Mr. Powell has been with the

M. L. BROWN

company since February 1955 and has been Susanville district manager. He was made general commercial manager in October 1956.

D. L. OESTREICHER

Marlin Brown comes to the Redding post from the Virginia Telephone & Telegraph Co. in Charlottesville, Va. where he was district manager of the company.

The company serves over 200 communities in seven states and Alaska. In California, the Citizens Utilities Co. operates the telephone systems in Modoc and Lassen counties and in part of Shasta, Solano and Sacramento counties.

General Announces Two Organizational Changes

Donald C. Power, president of General Telephone Corp., has announced several organizational changes at General's headquarters office in New York.

Effective May 15, D. E. LaMaster, who is currently general commercial manager of General Telephone Co. of Illinois, will become director of Commercial Operations for the system and report to Walter G. Wright, vice president—operations.

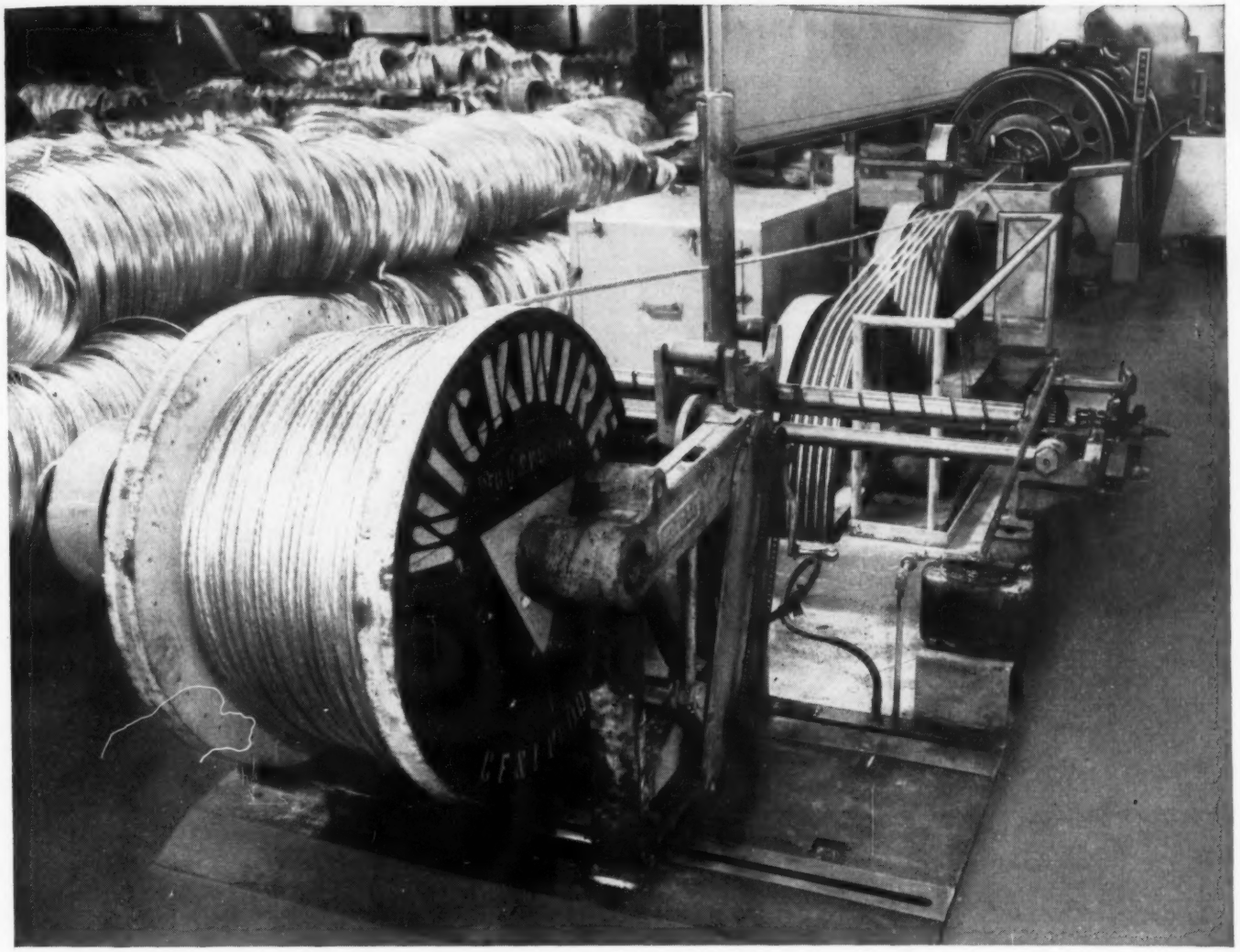
Effective June 1, Richard C. Schneider, who is currently plant extension engineer at the headquarters operations department in New York, will become training and recruitment supervisor for General Telephone System, a newly-created position in the personnel department, reporting to Marshall K. Taylor, director of personnel.

Incorporates in S. C.

On May 3 the Cassels Telephone Co., Jackson, S. C., was authorized to incorporate. The president is H. M. Cassels.

Named Mason Official in Fla.

Marcus L. Donaldson, chief engineer of the Peninsular Telephone Co., Tampa, Fla., recently was elected grand master of Masons in Florida.



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CF&I Galvanized Steel Strand assures quality, service and dependability. This strand is manufactured to ASTM Specifications A-122, A-363 or to your own specification in seven- and three-wire constructions. Next time you need steel strand for ground, messenger or guy wire applications, contact the nearest CF&I sales office for complete details.

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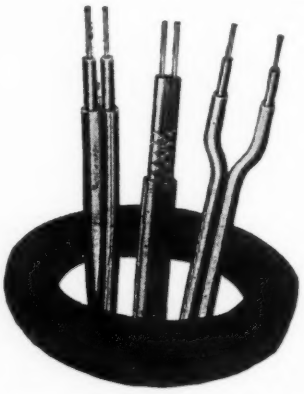
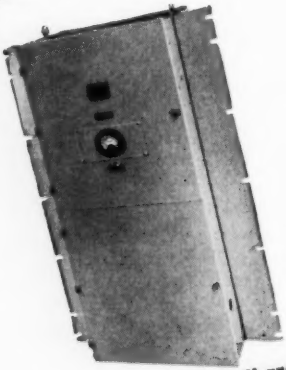
Type 775-AP Direct Burial Cable for severe ground conditions. Individually insulated conductors are paired and cabled with a covering of aluminum tape; a plasticized jacket, plus a butt lapped, stagger jointed, flat armor tape; and a second overall jacket of plasticized polyvinyl chloride. Available in 24, 22 and 19 gauge, 11 through 404 pair. ANSONIA WIRE & CABLE COMPANY.



Long Service Life and Low Plant Costs go hand in hand with the installation of ENDURPRENE — The Neoprene Drop Wire available in both Copperweld and Bronze. This flexible and easy-to-handle wire is made by GENERAL INSULATED WIRE WORKS, INC.



New 48-Volt Battery Charger Line. Completely redesigned Raytheon Rectifier Chargers (R) feature no load to full load regulation of ±1%, no tubes, automatic compensation for rectifier aging, no audible hum. Most compact units on the market—single and three phase, output from 30 to 400 amperes. RAYTHEON MANUFACTURING COMPANY.

Mobile Power Unit for use by telephone cable splicing crews, for lighting, operating solder pots, solder irons and electric blowers for ventilating manholes, with a centrifugal or diaphragm pump to keep the manholes dry. S & G MANUFACTURING CORPORATION.

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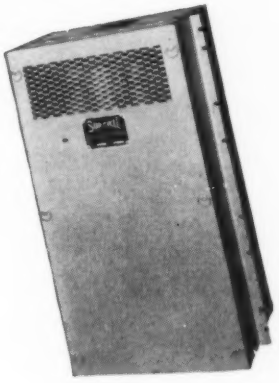
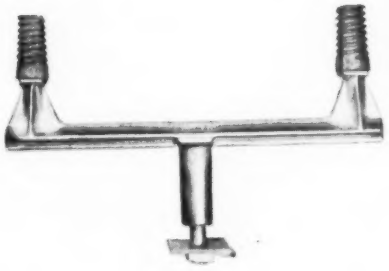
Outstanding Battery Performance is yours when you choose Gould Planté Batteries. Thick, grooved, pure lead positive plates give many years of trouble-free service! Made by GOULD-NATIONAL BATTERIES, INC., the finest money can buy.



For Decimonic Ringing Systems—The K-5 Subcycle supplies permanently accurate ringing frequencies and closely regulated ringing voltages. Requires little power to operate and minimum maintenance. LORAIN PRODUCTS CORPORATION.

Shallcross No. 6100 Wheatstone Bridge—This portable instrument is designed to measure any resistance from 1 ohm to 1 megohm; locate grounds, crosses, opens, and shorts by the Murray, Varley, Hillborn or Fisher Loop and Capacitance tests. Can be operated by repairman wearing gloves. SHALLCROSS MFG. COMPANY.



Speed up Installation with one-piece, all aluminum, transposition brackets. Light weight, easy to handle and install. They come completely assembled in cartons of 20 brackets each and can be moved to job in original shipping cartons. Delivery 10 days from receipt of purchase order. PERMANENT MOLD FOUNDRY, INC.

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And it's Klein again with a new, high leverage cutting plier for light- or heavy-gauge wire, including No. 2 weatherproof hard drawn solid copper wire, and A.C.S.R.

There's no extra hinging of any kind—no uncomfortable wide-spread handles—with this new Klein-Kut Plier. The offset hinge permits the extra-high leverage and operation is as smooth and easy as with any other Klein Plier. Forged from high-grade tool steel, individually fitted, tempered, adjusted and tested. Ask for No. 213-9 N.E. for streamlined pattern.

Regular pattern available
Same high-leverage design, but in the original Klein side-cutting pattern. Ask for No. 213-9.

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IN THE NATION'S CAPITAL

Continued from page 19

by way of a relative trend. It seems like the Russian government has found out, at long last, that overcentralization of bureaucracy is a wasteful, expensive, and unsatisfactory way of getting things done. Here in the United States, with so many continued and growing demands that the federal government take over the responsibility of more and more things, we might well note the latest move going on in Moscow.

On May 7, Nikita Khrushchev lashed out at Soviet bureaucracy and asked his Supreme Soviet to approve his plan to "transfer the center of gravity" of the Soviet economy. "There are entirely too many supervisors employed by every factory," the Communist Party chief declared. "Our job is to encourage the quality of production to the point where a worker does not have a supervisor standing behind him checking his work."

Khrushchev estimated the bureaucrats at 850,000 and promised a reduction. At one point he observed: "We have so many supervisors checking the output of neckties that the quality of our neckties is still pretty inferior."

The Supreme Soviet is Russia's equivalent of a parliament. It proceeded to approve Khrushchev's economic plan, which calls for 20 large industrial ministries in Moscow to be abolished, with their economic enterprises transferred to 92 new regional economic councils scattered throughout the Soviet Union. He said the plan must be put into effect "in the interest of further development of the economy."

Rochester (Ind.) Company Joins DDD Network

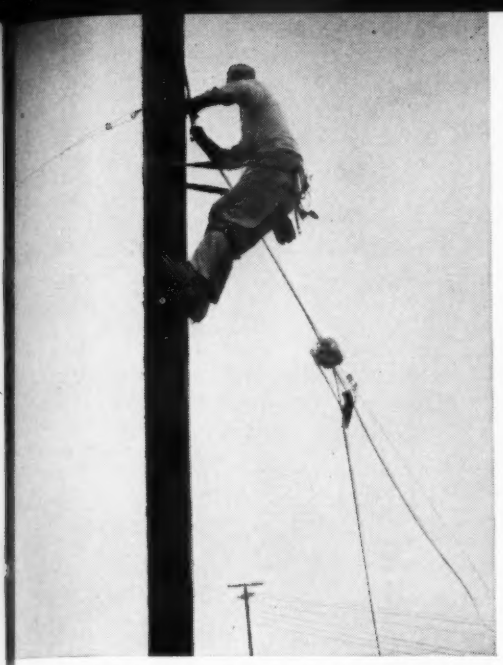
The Rochester (Ind.) Telephone Co. on April 28 cut over to Stromberg-Carlson XY equipment, and at the same time tied into the nationwide Direct Distance Dialing (DDD) network.

It was reported that provision for direct distance dialing to subscribers in Rochester by subscribers in towns connected to the DDD system, had been made. Rochester-originated long distance calls still must be made through an operator, however.

Praise of Brevity

If you would be pungent, be brief, for it is with words, as with sunbeams, the more they are condensed, the deeper they burn.—SAXE.

Jands Csehak and his five-year-old daughter Marih, Hungarian refugees in Canada, are shown happily inspecting a booklet which may prove to be an important link in tracking down relatives and friends from the homeland. The booklet, describing dial telephone service in nine different languages, is published by Bell Telephone Co. of Canada, and is made available to all immigrant families. Mr. Csehak and his daughter are two of 113 such refugees who have found a warm welcome in Canada.



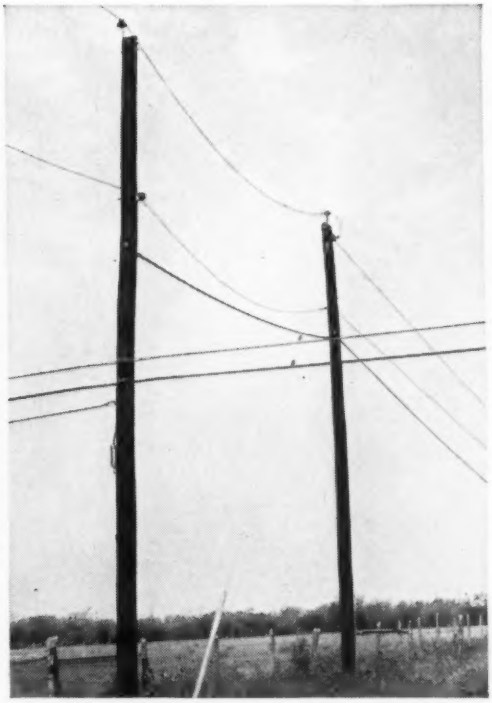
Aerial & Duct Cable. Tough polyethylene jacket defies abrasion, moisture, sunlight, weather. Cable is lightweight . . . easy to install and splice. Either regular or factory-assembled aerial cable available.

Self-supporting Cable. Same as Aerial & Duct Cable, except conductors are hard drawn, which lets cable be self-supporting without damage to jacket. Cable eliminates messenger and hardware expense.

Direct-burial Cable. Double polyethylene jacket makes this cable ideal for direct burial. It's tough, resists moisture, soil chemicals, fungi. Aluminum shield and armor add rodent, lightning protection.

See the Man from Anaconda–for telephone cable

Rural and Urban Distribution Wire. Plastic jacket gives full protection during installation, service. No over-all jacket—pairs are color coded, readily accessible for taps, easy to splice.



Paper-lead Cable. Anaconda now supplies a full line of paper-lead telephone cable made to the same rigid standards of quality and performance that distinguish its plastic telephone cables.

Splicing Kits. Complete kits containing all required splicing materials plus full instructions for splicing and grounding Anaconda Telephone Cables are available. Order with your cable.

Everywhere—Anaconda offers "on call" service in telephone cable. Seven mills, strategically located across the country, back a national network of distributors to assure you prompt, accurate service on highest quality telephone cable. On your next job—ask your distributor for Anaconda cable. Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y.

57383

ANACONDA®

XUM

construction and maintenance DIGEST

- **Insure your power**
- **New small insulator**
- **Long-lived service**
- **Country-style thrift**

Published regularly to help you get the most out of your materials and supplies dollar

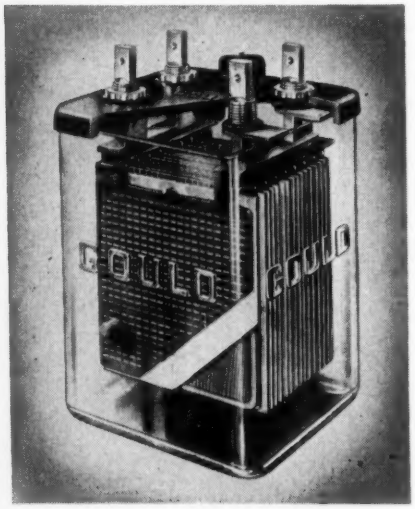
by Earl A. Roesch, Office Mgr. and Inside Sales—Rochester

Fishing is a great hobby—but it's poor business. I've noticed this over and over in my 29 years with Stromberg-Carlson. When it comes to selecting supplies and equipment, **smart** men in the telephone industry **don't** fish around. They order direct from Stromberg-Carlson and get the protection of a double guarantee—ours and the maker's. I've seen examples by the thousands of the careful attention paid to your supply needs. It's typical of the company that operates a full-time research program to bring **you** new and better telephone equipment. Your orders help us carry this program forward, faster. That's why we appreciate your business—and why we'll continue to show our thanks by giving you the best service we can.

Insure your power supply

Because Planté batteries practically last forever...providing standby power that never fails...they're the best operating insurance you can buy. In switchgear, signal and alarm systems, or emergency light and power applications, these lead batteries have rolled up amazing performance records . . . are famous for their ability to deliver a powerful surge or a steady flow of current the instant it's needed. Make sure you're in operation . . . always. Choose Gould Planté.

Your Stromberg-Carlson representative can offer prompt delivery on your order.

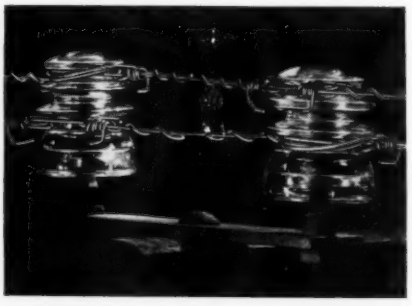


A sure, dependable supply of power when you need it. That, briefly, is the story of this Gould Planté battery.

Smaller, lighter insulator for point transposition

Here's the answer to your demand for a small, light insulator for point transposition.

Weighing almost 25% less than its predecessor, the Hemingray Number 56 insulator has several important advantages. It's grooved just right to hold wire firmly. It's small and easy to install. Requires **no** special hardware, and goes on standard pins.

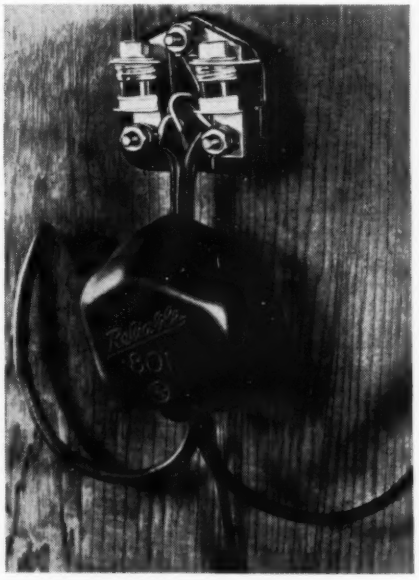


You'll get years of reliable service from each Hemingray insulator, because they are unaffected by sudden or seasonal temperature changes, do not age or deteriorate. All surfaces are, of course, impervious to moisture.

For faster line work on rural lines, this one-piece insulator can save you installation time, and maintenance costs. It's backed by the vast experience of its manufacturers, who have made Hemingray insulators the "World standard since 1870."

Long life under all conditions

You get long service life under all kinds of weather conditions with the Series 800 Fuseless Protector, recently developed by Reliable Electric Company.



Easy to install and maintain

This new protector is available with Reliable No. 504 Protector Units (as No. 801) for station protection and with Reliable No. 506 Protector Units (as No. 801A) for cable protection.

The weather-tight neoprene cover has passed the Underwriters Laboratories severe requirements for performance and weathering under temperature extremes. The protector is listed under UL Re-examination Service.

The neoprene cover fits snugly and drops out of the way conveniently when protector is installed or serviced.

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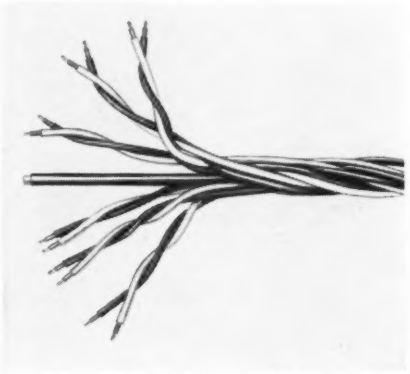
Rural Distribution Wire Gives Speed Plus Economy

For fast, low cost construction specify Ansonia Lightweight Rural Distribution Wire.



Ankoseal Rural Distribution Wire Ideal for Temporary Service or Cable Relief

It comes with plastic-insulated #19 A. W. G. soft copper conductors in color-coded parts, which are cabled around a polyethylene-insulated .109 high strength galvanized steel support wire. Each conductor pair has a controlled different length twist to avoid cross-talk.

A breaking strength of 1800 pounds makes this Ansonia Wire & Cable Company product ideal for temporary service or cable relief.

Did you know . . . that the Stromberg-Carlson general catalog has more than 100 pages of maintenance and construction supplies alone? You can do *all* your business "under one roof" and find the same quality and reliability in every item.

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A DIVISION OF GENERAL DYNAMICS CORPORATION

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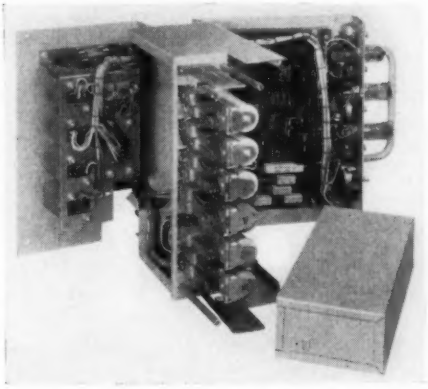
News on New Products

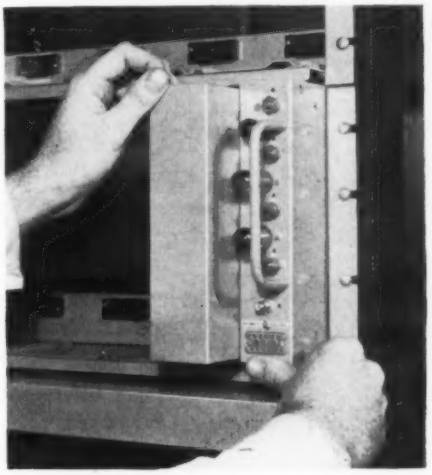
SINGLE FREQUENCY SIGNALING— Automatic Electric Co. is now manufacturing compact single frequency signaling equipment. Developed by the General Telephone Laboratories, the new equipment is a compatible equivalent of, and has the same characteristics as, equipment made by Western Electric Co.

The Automatic Electric single frequency signaling unit, according to the company, has been substantially miniaturized. The oscillator and tone supply transfer units used in connection with it are also highly compact. The equipment can be readily disconnected and replaced in maintenance operations.



Company engineers say single frequency signaling equipment has become a practical necessity for many companies which will tie in with the nationwide Direct Distance Dialing (DDD) network. They say it answers a new need by making it possible to send dial pulses and supervisory signals over the same channel used to carry conversation.

Since it does not require channels for dialing and signaling external to the voice band, it more efficiently utilizes the frequency spectrum and can more economically be applied to any type of telephone circuit. Automatic Electric's equipment is designed to mechanically line up with Lenkurt's "Type 45" carrier equipment, and to mount on a 19-inch carrier equipment rack.



It also contains features permitting it to supply, simultaneously, any signal output level which may be required by any of the popular carrier systems which have been extensively installed in the past, such as Lenkurt Type 33A, the company states.

This is how the single frequency signaling equipment works on a Direct

TELEPHONY PUBLISHING CORP.
608 S. Dearborn St.
Chicago 5, Ill.

Please have the manufacturer send me without obligation the literature indicated by the following numbers:

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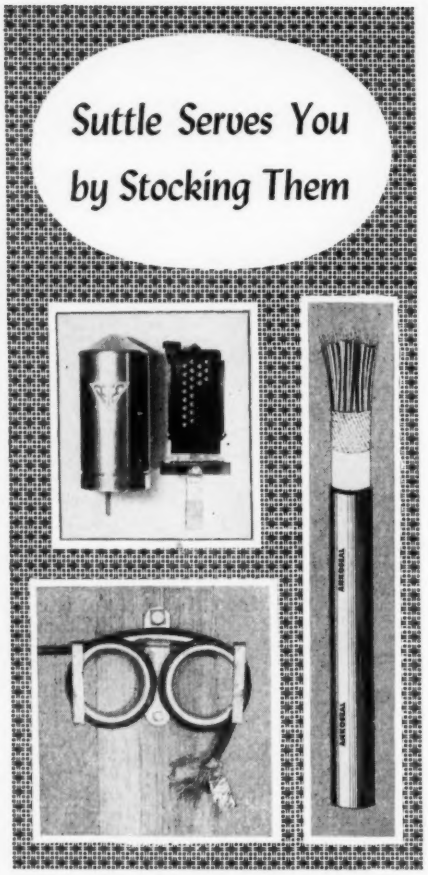

All supplies you need for small cable jobs are in stock at Suttle for your convenience. Get them all in one shipment. And those emergencies on big jobs can be suppressed by our prompt handling of your needs.

Ankoseal Plastic Cable

Standard 22-gauge in stock from 11 to 101 pair for delivery in less-than-reel lengths. The Self-Supporting 19-gauge is carried in 6, 11, 16 and 26 pair for less-than-reel lengths.

Channel Supports

Plenty of these in assorted sizes for the small jobs.

Terminals & Accessories

About any style terminal you prefer can be delivered promptly. Also any other accessories such as messenger, splicing materials, grips, etc. are on hand for quick shipment.

You will like Suttle's attention to your orders or inquiries about cable for those big jobs too.

See Your SUTTLE Catalog

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Suttle EQUIPMENT CO.

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Distance Dialing network: Single frequency units are located at both ends of the direct long distance circuit. Each unit transmits a continuous low-level tone *along* the channel as long as the channel is not in use. This tone is detected by receivers at each end of the channel which, in turn, indicate to switching equipment that the channel is idle and available.

When a toll operator or subscriber starts a long distance call, the single frequency signaling equipment stops transmitting the tone over the outgoing channel. The absence of the tone indicates that the channel has been seized.

When the number is dialed, the dialing signals are transmitted over the channel as tone pulses of the same frequency as the signal which indicated the idle channel condition, but at a 12 db higher level. The called subscriber's telephone rings upon completion of dialing and switching. The signal tone over the channel is removed when the "called party" answers.

If an operator is involved, she is notified of the progress of the call by signal lights on her board. When the conversation ends, and the subscribers hang up, the continuous tone—indicating the channel is again idle—is again transmitted. The supervisory signals are sent over the voice channel in the same way as the dialing signals.

Single frequency equipment usually uses a 2,600-cycle tone. Appropriate guard circuits in the receiver make it virtually immune to interference from speech tone, it is said.

For signaling over two-wire circuits, or two-wire extensions of carrier channels, two tones are used—2,400 cycles in one direction and 2,600 cycles in the opposite direction. This system prevents mutual interference between the two directions of transmission, but still only a "single frequency" is used in each direction. Request NP660.

•

FILM INDEXING SYSTEM—Offered for the first time on a commercial basis is index coding produced directly on 16mm microfilm, according to an announcement by Recordak Corp.

An integral part of the new Recordak Reliant Microfilmer, it is known as Kodamatic Indexing, and answers a time-saving need in business offices when reference is made to microfilm records.

Kodamatic Indexing is produced by two lines exposed in between the document images. As the film is advanced through a constant-focus film reader the lines change position either later-

KENTUCKY DIVISION OF SOUTHERN BELL INSTALLS NEW TYPE PURGING SYSTEM

Faced with the need for exceptionally dry air in local and toll cables to eliminate interruption of service due to moisture, Kentucky Division of Southern Bell Telephone Company, Louisville, Ky., has installed Industrol Automatic Purging Systems. These units are . . .

Flexible, Compact,
Maintenance Free, Efficient.

Industrol Dryers have been developed specifically for use in remote radar and for other large and small transmission line installations.

Your Industrol representative can answer your questions regarding specialized dryers developed to handle your own drying requirements. Contact your local Industrol Salesman or write directly to Department 321, Industrol Corporation, Roselle Park, New Jersey.

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INDUSTROL

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ally or vertically as predetermined by the index coding.

In combination, these lines can be exposed in 99 different code positions. The indexing is read while the film is moving.

The position of each code line on the film is established by two control dials, located along side the feeding throat on the front of the microfilmer. Each dial is numbered from 0 to 9.

When set at specific numbers, the dials activate tiny lights which expose the code on the film. Alphabetical scales are also available for the control dials.

Each of the two lines in the indexing system is confined to one side of the film. A thinner line down the center of the film separates the two code lines. It also serves as a guide to match the indexing scale on the reader screen.

When viewing film, the operator simply watches the lines move across the code scale until they fall into the correct index position for a specific document.

The Kodamatic Indexing device is built into the Recordak Reliant Microfilmer and is included in the selling or rental cost. Request NP661.

•

HOLE DIGGER—Pictured here is a Roper Mfg. Co. hole digger, an automatic digging tool that will dig 25 foot holes in six minutes, the company reports.

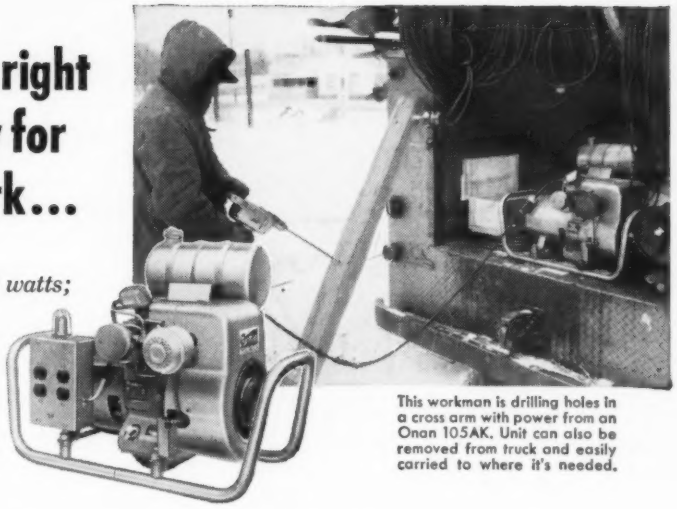
Interchangeable augers from six inches to 24 inches in diameter are available with the Roper Hole Digger which, according to the company, does not need expensive power transmission drives in order to operate.

The digger will dig a straight or angle hole from any jeep, truck, or tractor equipped with front or rear boom and winch. It does not require one or two men to ride the auger in order for the digger to dig.

The weight of the gasoline motor

Just the right capacity for line work...

develops 1500 watts; weighs only 125 pounds; 4-cycle engine power



This workman is drilling holes in a cross arm with power from an Onan 105AK. Unit can also be removed from truck and easily carried to where it's needed.

Onan Model 105AK-1P Electric Plant

This power-packed lightweight plant supplies all the power you need for electric drills, saws and other equipment . . . and for floodlighting on night jobs, too!

Quick-starting, 4-cycle Onan air-cooled engine is direct-connected to Onan all-climate generator in a single, permanently-aligned compact unit.

Four plug-in receptacles, pilot light and carrying frame are standard. Other lightweight portable and mobile Onan plants from 500 to 10,000 watts.

To save time and speed work on construction and maintenance projects, equip your crews with Onan Portable Electric Plants.
Call your Onan distributor or write . . .

Onan ELECTRIC PLANTS

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#7458 SEALING COMPOUND. The C Resin Compound and activator, when mixed together, produce the proper proportion of flowable compound, known as one unit, to produce a plug or dam when desirable to sectionalize cable and seal cable terminals. The compound and activator is packaged in two sizes; regular size 50 gram compound and 19 gram activator, large size 168 gram compound and 64 gram activator. Additional information is available on installation and on the tools required.

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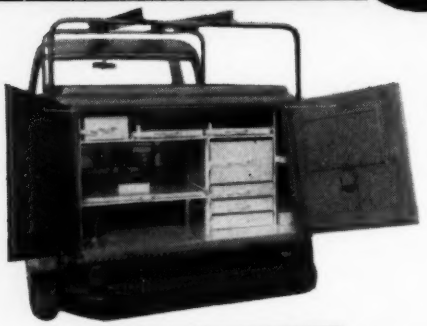
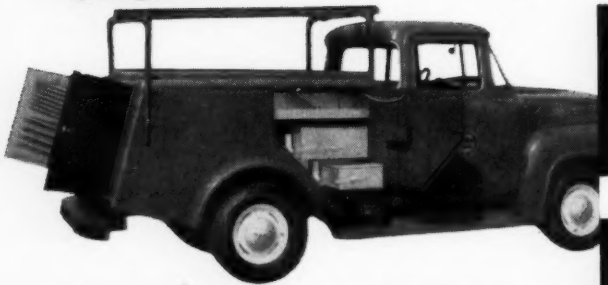
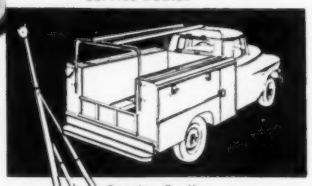


Series I-40
INSTALLERS BODY

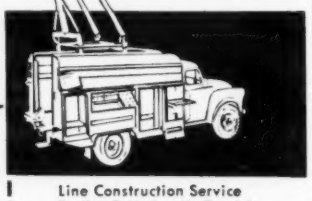
Special Truck Body developed for telephone installation and service work. Provides maximum storage space for necessary parts and materials, readily accessible, easily inventoried. An **advance design** incorporating all the **latest features** — easily adapted to varied urban and rural service problems.



Personnel Carrier Service Bodies



Service Bodies



Line Construction Service Bodies & Hydraulic Derricks

OVERALL LENGTH is 81", width 58" (approximately 6 feet across fenders). Length at top, 72¼", length at floor line, 79¼". Body designed for installation on any standard chassis with a 38" to 42" cab-to-rear-axle dimension. Space provided for either 4-foot or 6-foot ladders as specified and for all normal telephone installation and maintenance equipment — apparatus, directories, pay-out reel, wire, belts and materials. Spare tire is carried on special sliding tray in left-hand compartment.

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Please send price and delivery information on Series 1-40 Installers Body. I would also like information on:

☐ Personnel Carrier Service Bodies ☐ Service Bodies ☐ Line Construction Service Bodies & Hydraulic Derricks

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mounted directly above the auger is more than sufficient, the company states. Finger tip controls make it easy for one man to operate.

The hole digger comes with standard 6-foot augers with extensions available up to 25 feet. Request NP662.

•

MOBILE MARINE UNIT—General Electric Co.'s communication products department has developed a new multi-frequency VHF mobile marine radio unit for ship-to-shore and ship-to-ship communication.

The new equipment is capable of five-frequency operation. It is therefore able to provide up to two frequencies more than the three normally required in the marine service. It allows up to two common carrier channels with selective-signaling and also provides for automatic reverting to the channel reserved for safety-calling.

Two models have been designed—one for use in 6 or 12-volt dc systems and the other for 117 volts ac.

The equipment is housed in a weather-proof case slightly smaller than General Electric's standard pole-mount cabinet. It includes regular General Electric mobile equipment such as a T-33 transmitter and two R-3 high band receivers. A special power supply is added. NP663.

•

REEL CART—A versatile new reel cart, manufactured by Columbia Products, Inc., and equipped with a hydraulic jack can be used for several purposes: (1) To transport reels of wire rope and cable, (2) as a metering stand for paying out cable, (3) as a turntable for large coils, or (4) to lift reels into and out of cable winding machines. The cart does the work.

It is able to lift reels weighing up to 1,500 pounds. The arms will accommodate reels up to 48 inches in diameter by 32 inches wide.

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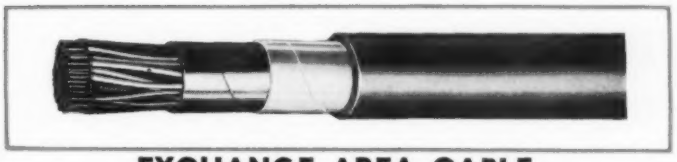
REX

TELEPHONE WIRE & CABLE *for all needs...*

Aerial and Duct are R. E. A. listed. Both Aerial and Duct and Direct Burial Cable utilize polyethylene insulation, aluminum shield and high molecular weight polyethylene jacket for top electrical values. Available in #26, #24, #22, or #19 AWG in 6 through 404 pairs.



EXCHANGE AREA CABLE

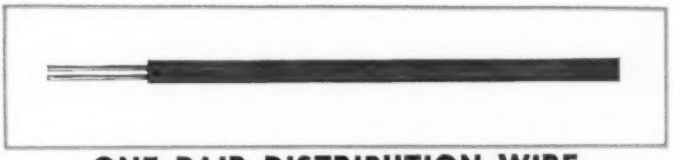
Conductors insulated with high molecular weight polyethylene and jacketed with color coded, weather resistant vinyl provide good transmission values at low cost. Available in either #19 or #22 AWG with 3, 6, 11, or 16 pairs cabled over a high molecular weight polyethylene insulated high strength galvanized support wire.

RURAL DISTRIBUTION WIRE

The rugged weather resistant vinyl insulation over the conductors is fully color coded. This construction, designed for block distribution, serves best where low cost rather than low attenuation is the prime consideration. Available in #24 AWG with 6, 11, or 16 pairs.

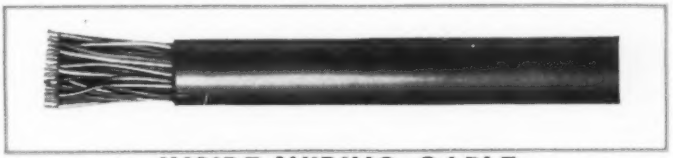
URBAN DISTRIBUTION WIRE

A high molecular weight, weather resistant polyethylene extrusion encompasses the parallel conductors. A raised ridge tracer provides polarity identification. The high strength conductors make possible long spans on lateral branches or drop runs. Available in #14 or #12 Copperweld or .083 galvanized steel.



ONE PAIR DISTRIBUTION WIRE

Solid, soft drawn bare copper conductors fully color coded with heat resistant polyvinylchloride insulation. All pairs twisted with varying lays to minimize cross talk and cabled to insure maximum flexibility. A tough, water resistant vinyl jacket in either brown or ivory provides good conductor protection for exposed insulation. Rip cord construction prevents damage to conductors in stripping. Available in #24 AWG with 6, 12, 16, 21, 26, 51 or 76 pairs.



INSIDE WIRING CABLE

SEND TODAY FOR THIS CATALOG — CONTAINS COMPLETE DATA AND SPECIFICATIONS FOR ALL REX WIRES AND CABLES.

INDEPENDENT

REX WIRE & CABLE

Manufactured by

THE REX CORPORATION

100 HAYWARD ROAD, WEST ACTON, MASS.

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The cart is of sturdy welded steel construction with rubber-tired wheels. It is equipped with a foot brake, which locks against the front wheels. Shafts and bushings for the reels and a wire leveling roller are furnished as standard equipment. Request NP664.

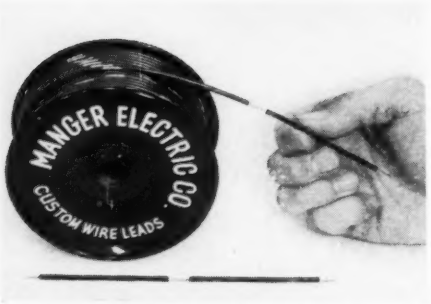
•

CENTER STRIPPING—The Manger Electric Co. offers an exclusive new process that permits automatic center stripping of conductors of all gages, insulated with most materials.

The stripped portions of the conductor can be supplied in the form of individual center-stripped leads or as a continuous coil. This processed wire would result in a great saving during assembly.

The company will process wire supplied by the customer or will purchase and process wire of the customer's specification.

This service should be of particular interest to manufacturers of products containing multiple banks of electrical components such as are used in PBX units having common terminating points. Request NP665.



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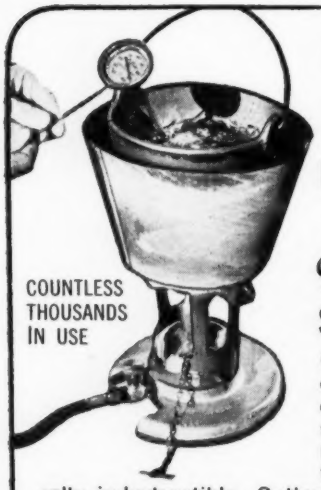
VACUUM TUBE VOLTMETER-OHMMETER—The Paco Electronics Co. has announced a new line of build-it-yourself instrument kits.

The model V-70 (see cut), a vacuum tube voltmeter and ohmmeter combined, has ranges of 1,500 volts ac or dc and 1,000 megohms.

Other kits include a 6 and 12-volt battery eliminator, a resistance-capacity-ratio bridge, a 5-inch cathode ray oscilloscope and a tube checker. Request NP666.

•

MILLIVOLTMETER RECORDER—A new bulletin on a portable millivoltmeter recorder for use in electrolysis survey work has just been announced by The Bristol Co.



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Dillon STAINLESS STEEL TEMPEROMETER

One of the handiest, most dependable "tools" in any cableman's kit. Stainless steel construction defies rough treatment and makes these precision units practically indestructible. Outlast glass thermometers many times over. Range is 200 to 1000° Fah. Dial diameter is 2¼". Stem length is 7¾". Furnished with handle. Decide **today** to eliminate porous cable joints. Accurate Dillon Temperometers cost very little yet offer real insurance against this hazard. Dial shows recommended temperature for wiping solder, paraffin, impregnation waxes, etc.

Satisfied owners in the telephone and utility fields specify Dillon Temperometers as **standard** equipment. Shipment is from stock at the factory or orders may be placed with leading jobbers. Illustrated bulletin upon request. No obligation!

W. C. DILLON and CO., INC.

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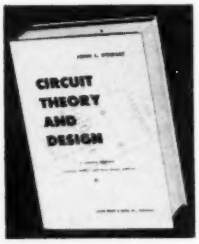

design problems—with

CIRCUIT THEORY and DESIGN

By John L. Stewart, *California Institute of Technology*. Stressing modern, powerful pole-zero design methods, this book applies modern network theory to the understanding of vacuum tubes and feedback systems.

The author avoids use of abstract mathematics, yet gives data and design procedures of practical significance, discussing a wide variety of specific devices. The pole-zero design methods, given in easy-to-use form, show development of design for a large variety of circuits with and without vacuum tubes, and for systems with and without feedback. This book is a *must* for anyone interested in design and research in linear systems. **1956. 480 pages. 463 illus. $9.50.**

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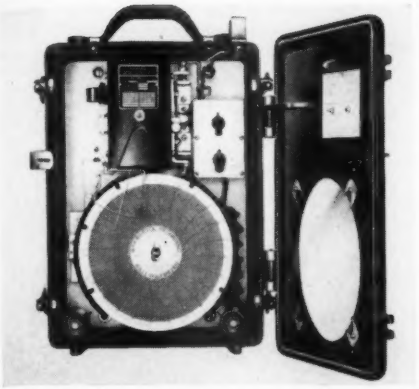
XUM



The four-page bulletin describes the use of the new instrument in surveys of electrolytic corrosion and deterioration of underground structures such as pipe and cables. A bibliography on actual testing methods and their significance is included.

The millivoltmeter recorder is weatherproof and completely self-contained. It records on an 8-inch diameter chart, which can be furnished to rotate once in 96 hours, three days, or seven days.

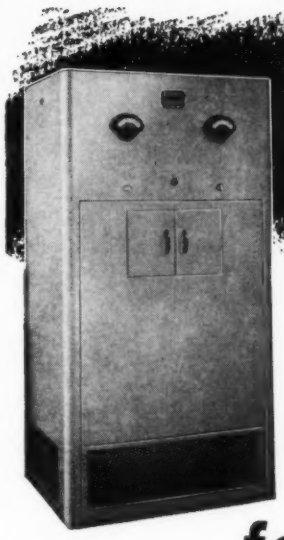
The instruments are available with movement sensitivity of either 2,000 or 10,000 ohms per volt; each is equipped to measure over eight ranges, which are selected by a tap switch. Request NP667.

•

OVER-THE-FLOOR EXTENSION CORD—Ideas, Inc. has introduced a new rubber over-the-floor electrical extension cord for offices, homes, workshops, and places where an electrical outlet is needed in the middle of the room. It is called Electriduct.

According to the company, the cord is stumble-proof and unobstructive, eliminating serious accidents caused by tripping on tangled cords. Equipment on casters rolls over it easily. One end is plugged into a wall outlet and the other end has a two-way receptacle.

The duct is 2¾ inches wide at the base, which rises from a feather edge to an apex of 7/16 inch. Ribs on the underneath side prevent slipping on the floor and the enclosed wiring is safe from moisture.



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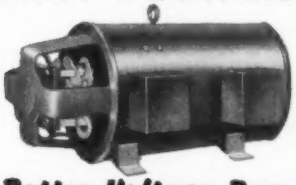

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A telephone exchange now using DC generators for charging the batteries can add one or more FLOTROLS and immediately obtain the precise voltage regulation characteristics of the FLOTROL for the entire exchange. The high efficiency of the FLOTROL will greatly reduce power consumption during those hours of the day when the FLOTROL alone is sufficient to carry the entire load; generators can be shut off during light load periods, thereby reducing the wear on the rotating equipment. By installation of FLOTROL capacity sufficient to carry the entire normal load, rotating equipment showing signs of wear can be saved for standby service, continuing its life indefinitely. The advantages obtainable from this type of installation are tremendous. For further information, send for Bulletin 161.

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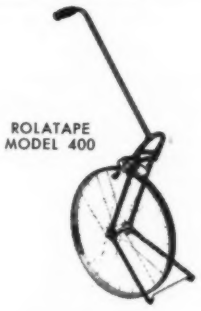
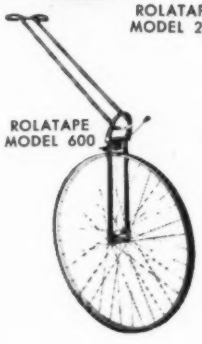


ROLATAPE MODEL 400

ROLATAPE MODEL 200



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ROLATAPE is the Fast, Efficient, Economical, Modern way to measure. Model #400 is widely used by Road Construction Companies, Telephone Companies, Utilities, Sewage Departments and many other industries where measurements are important.

MEASURING time is cut to a fraction with Rolatape. Model #200 is extremely popular with Real Estate Men, Appraisers, Traffic Officers and many others who demand fast, accurate, measurements.

WHEELS on all Rolatapes are precision calibrated, and can be depended upon for long-life service. Model #600 is a special model for long-distance, acreage measuring and for use over rougher terrain.

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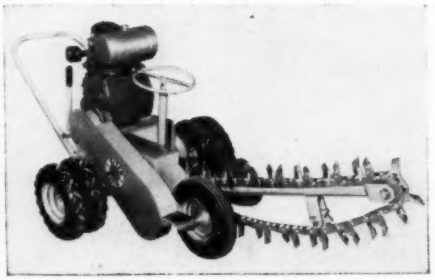
The complete duct system ready to plug into a wall outlet is available in standard 4, 5, 6 and 10-foot lengths.

Special lengths are also available for custom installations. Request NP668.

•

TRENCHER—A new service line trencher for contractors, utility companies and municipalities has been announced by the Charles Machine Works, Inc.



The new Model M Ditch-Witch trencher is completely mobile with three forward digging speeds and reverse plus road speeds up to 5 mph. In usual digging conditions the Model M will trench at speeds of 1½ to 6 fpm. It is also equipped with a trailer hitch for towing at speeds up to 25 mph.

Trenching widths and depths available on this machine are: Three inches wide up to 48 inches deep, 4 inches wide up to 36 inches deep and 6 inches wide up to 30 inches deep. The digging chains are quickly interchangeable on the job.

When digging, all spoils are deposited on one side of the trench, leaving the other side clear for access to the trench. The Model M may also be used for undercutting sidewalks and other obstructions by trenching in reverse gear.

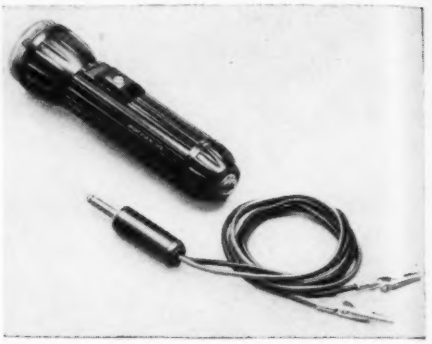
Powered by an 8 hp air-cooled engine and equipped throughout with sealed ball bearings, the Model M weighs 500 pounds. Request NP669.

•

COMBINATION SPOTLIGHT AND CONTINUITY TESTER—Bright Star Industries announces the availability of a combination spotlight and continuity tester, featuring a heavy duty industrial flashlight with built-in jack. Test leads have plug and clips for instant use.

Among the uses for this tester are: checking wiring, controls, circuits, fuses, grounds, shorts, opens, broken wire, switches, limits, relays, and many electrical devices; also for checking and setting contacts as desired.

The company states two testers may be used in series where it becomes necessary to check wiring or controls and cables of a reasonable length, at two different places, or where two men



cannot see or hear each other.

To use two testers in series, one man clips the black lead of his tester to conduit for a good ground. The other man clips the red lead of his tester also to conduit, or outlet, or switch box, for good ground wherever the checking is to be done. When both men are on the same wire with their other lead, both testers will light up.

The company points out this is not a voltage tester, and therefore it should not be used on live wiring, because one can't test line voltage through a flashlight bulb. Request NP670.

•

ALL-PLASTIC SWITCHBOARD CABLE—An improved all-plastic switchboard cable has been developed by engineers of General Telephone Laboratories and General Cable Corp. The new product, which will be manufactured by General Cable, will be furnished with most switchboards shipped by Automatic Electric Co. after June 1, and will ultimately be standard with all Automatic Electric switchboard installations.

It is the first cable of its kind to be manufactured in this country and requires specially designed equipment to produce, according to a joint announcement by Automatic and General Cable.

The tinned-copper conductors, which are not coated with enamel, are insulated with a superior grade of color-coded semirigid polyvinyl-chloride plastic, the companies state.

This color coding is unique the announcement states, in that multiple-colored compounds are spirally extruded simultaneously over the conductor to produce colors in required combinations and sequence. The colored stripes are therefore uniform throughout the insulation thickness and cannot wear off.

Color-coding conforms to existing standards, with two exceptions. The 12- and 22-conductor cables are specially coded so that they may be used as either pairs or as singles for a signal cable.

Insulation shrinkage in soldering tests has been no more than 1/32 of an

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Out West—

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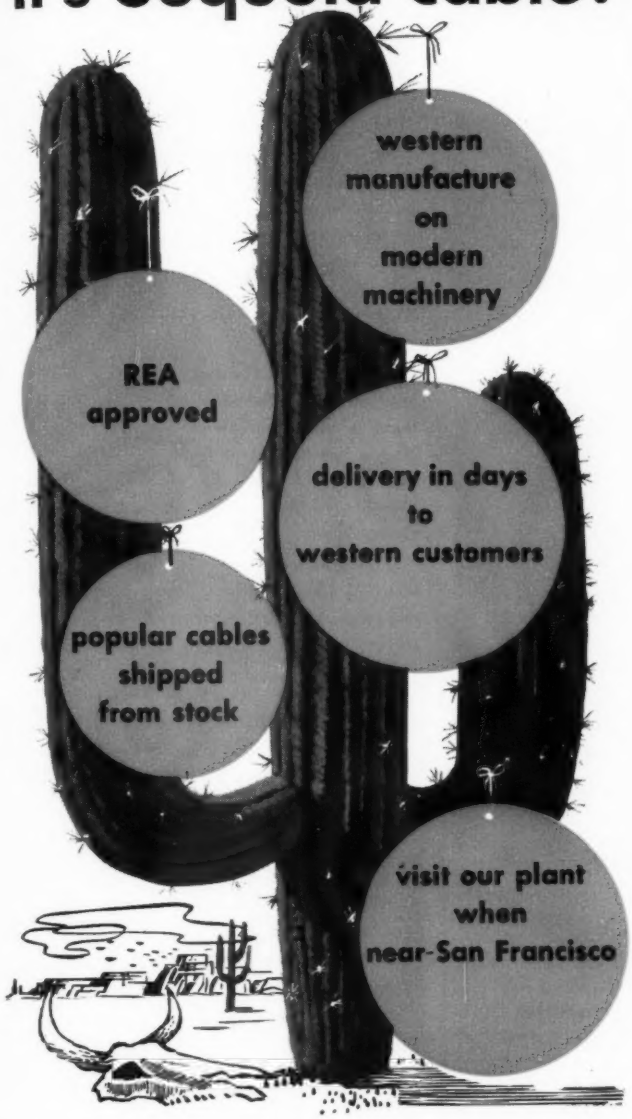
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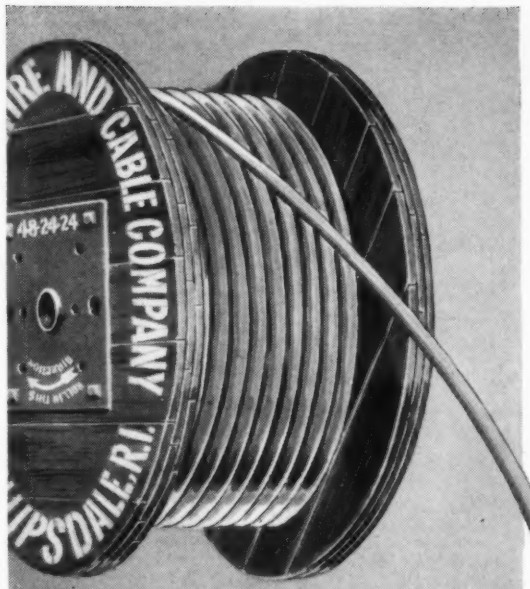

LONGER LIFE!

When you talk about Kennecott lead-alloy sheathed cable, longer life REALLY MEANS SOMETHING! It means retention of full electrical properties over the *entire* long, long life of the cable. That's because every component that goes into Kennecott Telephone Cable—from copper conductor to superior, uniformly strong "Young Process" lead sheath—is checked and tested. Flaws, imperfections and inferior materials are ruthlessly eliminated. Get complete information on Kennecott Telephone Cable from the Chase sales office near you.

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- An entirely new one man test set for locating aerial wire troubles. Easily and quickly locates all troubles from dead shorts and grounds to grounds and shorts with resistances that run up into several hundreds of thousands of ohms.
- Positive location of trouble spots: Locates the position of grounds and shorts and crosses in a minimum of time.
- Simple to use: One man with little or no previous experience can locate high resistance shorts, crosses and grounds.
- No need cut or open lines to locate troubles: With the Telo Cater Parallel test set it is no longer necessary to open your lines at test points, or cut your lines to determine the direction of your trouble.
- Not necessary to put line out of order while testing.
- Ideal for carrier line maintenance: Keep your aerial wire plant used for carrier in top notch shape.

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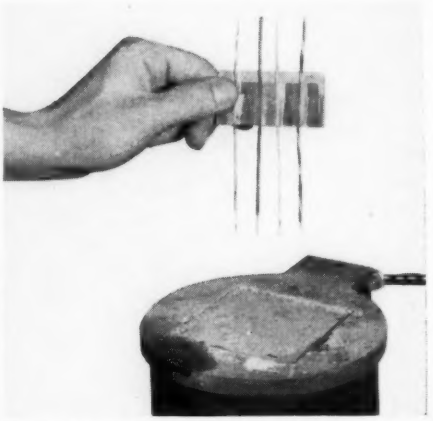
inch, compared to as much as ¼ of an inch in some other plastic conductor insulations.

A nylon rip cord is incorporated immediately under the jacket to facilitate removal of the jacket during installation.

The new cables are of layer or unit-type construction. Some will be available in either round or oval shapes. Color-coding in the new cable is not carried beyond the first 20 pairs and 20 singles of the standard color code. It is sometimes necessary, therefore, to repeat the same color-coded conductors.

To avoid confusion, such cables are of unit construction, with each unit separately bound by a different colored binder to facilitate complete identification. This further reduces installation time and reduces possibility of human error.



Test shows the soldering shrinkage resistance of the new semi-rigid plastic insulation, compared to that of two commercial grades of plastic insulation. All four wires were immersed in the solder pot for the same length of time. The two wires on the right are insulated with the new material, the other two with other types of plastic.

Installer hooks up new all plastic cable to terminal block. It can be seen that the conductors can be readily stripped with existing tools, and are free of both enamel and wax coating.

The conductor assembly is held together by a textile binder. A paper wrapper or barrier is applied over the assembly and a heavy tough grey vinyl protective jacket is extruded over all. No wax coating is used anywhere in the cable.

A major advantage of the new switchboard cable, according to the announcement, is that it will allow telephone companies to substantially reduce their inventory. Three classifications of textile cable are now used in the industry; humid, non-humid, and lead-covered.

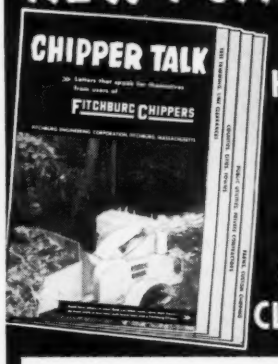
The new all-plastic cable serves the purposes for which all three were designed, and makes it possible for telephone companies to reduce the types and sizes of cable they must stock from almost 100 to 24, according to the companies.

Laboratory engineers say that extensive flame testing shows that the new conductor insulation and jacket compound do not support combustion. Request NP671.

•

HEAVY-DUTY UNIVERSAL DERRICK—Truck Equipment Co. announces a new heavy-duty universal derrick for

Yours FREE! NEW Portfolio



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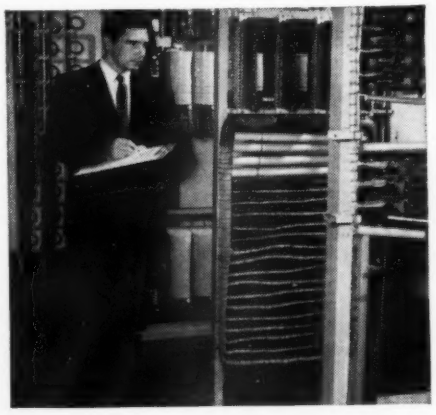

American Appraisals of reproduction cost may affect rates

An American Appraisal report of the cost of reproduction provides convincing evidence in the preparation of an appeal for adjusting rates to provide a more equitable return.

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installation on any truck chassis, with any type line body.

Called the Truco Turret Derrick, the company says it rotates 360 degrees; rises to 15 degrees from vertical; folds out of the way for storage or traveling, and is hydraulically powered.

The derrick requires 14 inches of mounting space. Hydraulic outriggers extend to 16 feet to provide extra wide footing and support to the vehicle.

A high capacity hydraulic system—3,000 to 15,000 pounds, depending upon the angle at which the pole is raised—moves and places the load without moving the truck within a 30-foot sphere. The system will raise the load up to 40 feet from the ground.

A winch is built into the derrick and is hydraulically driven. Hydraulic connections for driving other tools are also available.

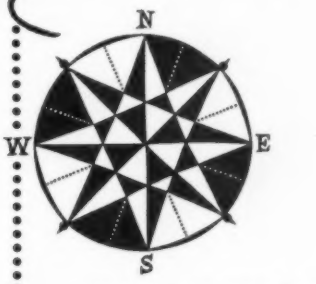
When the derrick is used as an aerial lift, push button operation gives the aerial crew control of movement in space.

The company says the turret derrick's versatility includes digging the hole and setting the pole as well as doing the overhead work. Request NP672.

Limit on the Future

"Trained man power, not money, not uranium, is the single most important limiting factor for the future in the peaceful application of atomic energy." —WILLLIAM F. LIBBY, *member, Atomic Energy Commission.*

TO THE NORTH
TO THE EAST
TO THE SOUTH
TO THE WEST



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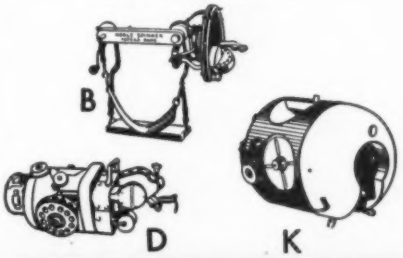

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R. H. Burfeind Retires From Automatic Electric

Raymond H. Burfeind has retired from Automatic Electric Co. after 52 years of service. For the greater part of this period, he has been engaged in sales work, and since 1948 has had special responsibilities in representing Automatic Electric at Independent telephone conventions.

R. H. BURFEIND

Mr. Burfeind was already an experienced telephone man when he joined Automatic Electric as a designer and engineer in 1904. He served three years in patent and seven in engineering, where he participated in the planning of early automatic exchanges and where he acquired broad experience with all phases of telephone equipment.

In 1914 he entered sales as a district manager, and in 1916 originated the idea and sold the first group of unattended community automatic exchanges (CAX), thus starting a program of wide scale adoption of such equipment in rural exchanges throughout the country.

Later he was placed in central office automatic equipment sales, and in this work, for nearly half a century, influenced the widespread sales of automatic exchanges in almost every state in the Union.

Mr. Burfeind was presented the Talbot G. Martin Award by the Strowger Automatic Club in 1942 for his outstanding contributions to the art of communications.

To Erect New Plant in N. Y. For Trinity-Industrol

A new 40,000-square-foot office and plant will be erected on a 14-acre plot in Cortland, N. Y., by the Trinity Equipment Corp., a manufacturer of Thermowells for the chemical and oil industries, and its subsidiary, Industrol Corp., which produces industrial dehumidifiers for the communications, power generating and process industries.

The laying of the cornerstone for the new building took place on May 14. New York's Governor Harriman officiated.

Stromberg Names Huddleston To Telephone Sales

The appointment of William R. Huddleston as telephone sales representative has been announced by T. C. Thompson, general sales manager for the telecommunication division of Stromberg-Carlson, a division of General Dynamics Corp.

W. R. HUDDLESTON

Mr. Huddleston will serve operating companies in Nebraska, Wyoming, Colorado and the northern half of Kansas, replacing Robert B. Leary, who, after several years in this territory, is returning to Rochester.

A native of Lincoln, Neb., Mr. Huddleston started with the Lincoln Telephone & Telegraph Co. 15 years ago as a groundman. He then became a cable splicer, and later progressed to commercial representative with the company. Subsequently he served as development supervisor before joining Stromberg-Carlson.

Mr. Huddleston was graduated from College View High School and later attended the University of Nebraska before entering the Marine Corps in 1942. He served until 1946 as a front line communications man.

He is a member of the Frank H. Woods Chapter, Independent Telephone Pioneer Association.

Nearly One in Every 70

In 1956, there were 2,368,000 Americans injured in traffic accidents.

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Roebling Lead-encased Telephone Cable—Available in conductor sizes 19, 22, 24 AWG...5 to 909 pairs. Paper-taped conductors, with 1% antimony lead sheath. Other coverings for special requirements.

Roebling Plastic Telephone Cable—Conductor sizes 19, 22 and 24 AWG... from 6 to 404 pairs. Light weight permits smaller messenger, longer spans. Conductors are polyethylene-insulated, sheath is high-molecular-weight polyethylene.

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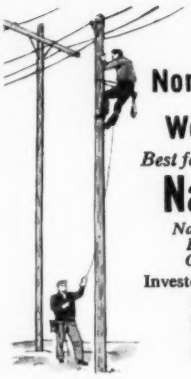

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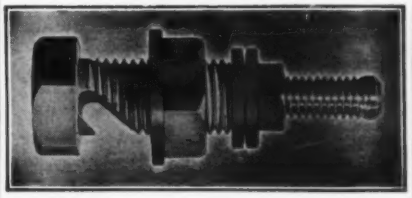

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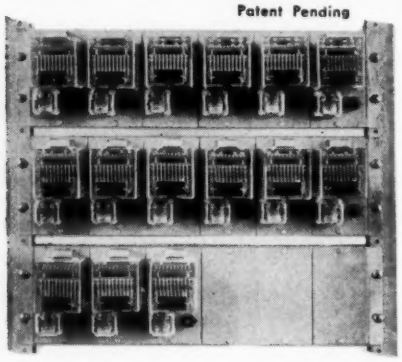

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